Final report

OWMC
Ontario
Waste Management
Corporation

A provincial crown corporation.

DILLON

SITE SELECTION PROCESS

PHASE 3B: SELECTION OF CANDIDATE SITES

Site Selection

VOLUME 1 - General Characteristics and the Identification of Site Areas

DECEMBER 1984

DILLON
Consulting Engineers & Planners

OUR FILE:
YOUR FILE: 9494-31

18 December 1984

Ontario Waste Management Corporation
2 Bloor Street West
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Toronto, Ontario
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Attention: Dr. B.D. Mitchell, Director of Corporate Planning and Development

RE: Site Selection Process - Phase 3B: Selection of Candidate Sites - Site Selection - Volume 1 - General Characteristics and the Identification of Site Areas

Dear Sirs:

We are pleased to submit Volume 1 of our four volume report - Site Selection Process - Phase 3B Selection of Candidate Sites. This volume describes the Phase 3B site selection process, the principles, goals and objectives which guided that process and the general facilities characteristics assumptions which were employed for site selection purposes. It also documents the process by which site areas were identified within the candidate areas.

Yours truly,
M.M. DILLON LIMITED

David P. Lawrence, M.C.I.P.
Site Selection Manager

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Site Selection - Volume 1: General Characteristics and the Identification of Site Areas

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1. Introduction 1
  1.1 Purpose 1
  1.2 Background 2
  1.3 Scope and Division of Responsibilities 3
  1.4 Format of this Volume 10

2. General Characteristics - Phase 3B Site Selection 11
  2.1 Introduction 11
  2.2 Site Selection Principles 11
  2.3 Goals, Objectives and Factors 11
    2.3.1 Introduction 11
    2.3.2 Goals 16
    2.3.3 Objectives 19
    2.3.4 Factors 20
  2.4 Facilities Characteristics Assumptions 21
    2.4.1 Information Base 21
    2.4.2 Focus of Analysis 21
    2.4.3 Assumptions 22
  2.5 Site Selection Process 23
    2.5.1 The Identification of Site Areas: Constraint Mapping 25
    2.5.2 The Identification of Potential Sites: Site Screening 25
    2.5.3 The Comparison of Potential Sites and the Identification of Candidate Sites: Initial Comparative Evaluation 25

3. The Identification of Site Areas: Constraint Mapping 26

3.1 Site Area Identification Process 26

3.2 Identification of Factors 28

3.2.1 Preliminary Identification of Factors 28

3.2.2 Refinements to Factors Based on Data Collection and Analysis 30

3.2.3 Refinements to Factors Based on Maintenance of Choice Considerations 31

3.3 Data Collection and Analysis 35

3.3.1 Purpose 35

3.3.2 The Data Collection and Analysis Process 36

3.3.3 Confirmation and Mapping of Data 36

3.4 Ranking of Factors 39

3.4.1 Ranking of Factors - Individual Consultants 39

3.4.2 Overall Ranking of Factors 41

3.5 Application of Factors 44

3.5.1 Factor Application Process 44

3.5.2 Step 1 - Level 1 Factors 48

3.5.3 Step 2 - Level 2 Factors 49

3.5.4 Step 3 - Level 4 Factors 54

3.5.5 Step 4 - Level 3 Factors 55

3.5.6 Step 5 - Site Identification Factors and the Maintenance of Choice 62

3.5.7 Conclusions and Results 77

References

APPENDIX A

Table A1.1 - Site Selection Objectives

Table A1.2 - Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Table A1.3 - Relationship of Facilities Characteristics Assumptions to Phase 3B Site Selection Analysis

APPENDIX B

Table B1.1 - Relationship of Objectives to Initial Site Area Identification Factors

Table B1.2 - Objectives Not Addressed by Site Area Identification Factors

Table B1.3 - Role of Facilities Characteristics Assumptions in Site Area Identification

Table B1.4 - Role of Site Selection Principles in Site Area Identification

Table B1.5 - Relationship of Objectives to Additional Site Area Identification Factors

Table B2.1 - Site Area Identification Factors - Definition and Significance

Table B2.2 - Additional Site Area Identification Factors - Definition and Significance

Table B2.3 - Additional Site Area Identification Factors - Access Route Comparison - Definition and Significance

Table B3.1 - Consultants' Ranking of Factors - Site Area Identification

Table B3.2 - Overall Ranking of Factors - Level 1 - Site Area Identification

Table B3.3 - Overall Ranking of Factors - Level 2 - Site Area Identification

Table B3.4 - Overall Ranking of Factors - Level 3 - Site Area Identification

Table B3.5 - Overall Ranking of Factors - Level 4 - Site Area Identification

Table B4.1 - General Site Selection Issues Raised Through OWMC Public Consultation Program

Table B4.2 - Fall Workshop Preferences - Treatment of Site Area Identification Factors

Table B4.3 - January Workshop Preferences - Site Selection Issues

Table B5.1 - Factors Used in Rating Candidate Areas for Relative Transportation Access

Table B5.2 - Transportation Cost Indices - Receiver Site Cluster Centroids

Table B5.3 - Accident Probability Indices - Receiver Site Cluster Centroids

Table B5.4 - Composite Haulage and Accident Probability Indices - Receiver Site Cluster Centroids

Table B5.5 - Niagara Escarpment Access Routes - Highway 20 to Regional Road 24

Table B5.6 - Access Route Analysis - Western Portion of Candidate Area 18

Table B6.1 - Site Area Identification Factors - Exclusionary

Table B6.2 - Site Area Identification Factors - Non-Exclusionary

APPENDIX C - BOUNDARY ADJUSTMENTS - CANDIDATE AREAS 7, 8 AND 17

Figure C.1 - Composite Constraint Map Revised Boundary - Candidate Areas 7, 8 and 17 - Standard Landfill and Fully Integrated Facilities

Figure C.2 - Composite Constraint Map Revised Boundary - Candidate Areas 7, 8 and 17 - Partially Integrated Facilities

LIST OF FIGURES

Figure 1.1 - Candidate Areas
Figure 2.1 - Selection of Candidate Sites
Figure 3.1 - Site Area Identification Process
Figure 3.2 - Composite Constraint Map - Example
Figure 3.3 - Candidate Area Accessibility

LIST OF TABLES

Table 1.1 - Site Selection Consultants 6
Table 2.1 - Role of Site Selection Principles in Phase 3B 12
Table 3.1 - Factors Used in the Identification of Site Areas 32
Table 3.2 - Additional Site Identification Factors - Access Route Comparison 34
Table 3.3 - List of Factor Maps 38
Table 3.4 - Site Identification Factors 79

EXECUTIVE SUMMARY

PREFACE

This executive summary presents highlights of the four volume report entitled Site Selection Process Phase 3B Selection of Candidate Sites - Site Selection. The first three volumes of this report document the three stages by which candidate sites were identified within twenty candidate areas:

I. the identification of site areas (constraint mapping);
II. the identification of potential sites (site screening);
III. the comparison of potential sites and the selection of candidate sites (initial comparative evaluation).

The fourth volume is a map portfolio containing the major maps which support Volumes 1, 2 and 3.

This report was prepared by the consulting firm of M.M. Dillon Limited (Dillon) on behalf of the Ontario Waste Management Corporation - (OWMC). Reference should be made to the main body of the report for the more detailed documentation of the process by which the eight candidate sites were identified within the twenty candidate areas. This report represents the synthesis of the technical contributions of a number of other site selection consultants. More detailed descriptions of the roles of these other site selection consultants are given in a series of separate documents listed in the References of this report.

PURPOSE AND BACKGROUND

The purpose of this report is to provide the technical documentation of the role assumed by a team of site selection consultants in the selection of eight candidate sites within twenty candidate areas.

OWMC has adopted a five step approach for the selection of an environmentally safe and suitable location or locations for establishing its special waste treatment and disposal facilities. These steps are as follows:

Step 1: Narrow the search to a geographic region in Ontario;

Step 2: Identify candidate areas suitable for each facility component within this geographic region;

Step 3: Identify candidate sites within candidate areas;

Step 4: Evaluate candidate sites and select preferred site(s);

Step 5: Test and evaluate preferred site(s) in detail.

Step 1 is documented in the OWMC Phase 1 (1982) and Phase 2 (1983a) report. Step 2 (Phase 3A), the selection of candidate areas within the geographic region is documented in the OWMC Interim Phase 3 Report (1983b). Step 3 is highlighted in the OWMC Phase 3 report (1984a). This report, together with the reports prepared by a series of other site selection consultants provides the technical documentation for Step 3 - the identification of candidate sites within the candidate areas.

SCOPE AND METHODS

The Phase 3B site selection process was shaped and defined by a series of principles, goals, objectives, factors and assumptions of facilities characteristics. The site selection process involved a team of site selection consultants and OWMC staff. Public and agency contributions were incorporated at key decision points. The methods employed in each of the three stages of Phase 3B pertained to the identification of site selection factors, the collection and analysis of data and the ranking and application of factors to identify relatively more suitable areas and sites.

Site Selection Principles

As described below, a series of site selection principles was used in the Phase 3B site selection process:

- the principle of a progressive refinement of the search process is reflected in the three stages (site area identification, potential site identification and candidate site identification) of Phase 3B. With each successive stage the analysis was progressively increased in detail and the geographic scope narrowed;
- OWMC has adopted the very broad and inclusive definition of the environment used in the Ontario Environmental Assessment Act (1975). This definition is illustrated in the wide range of considerations encompassed by the Phase 3B site selection goals, objectives and factors;
- the priority attached to the protection of human health and the environment is demonstrated in the selection of risk minimization and environmental factors and in the higher priority attached to risk and environmental factors over cost factors in the Phase 3B site selection process;

o the commitment to the involvement of those affected is illustrated in the incorporation of public and agency concerns and contributions into the site selection process. These contributions were provided through public meetings, information days, briefs and submissions and a series of site selection workshops;

o the need to ensure efficiency and effectiveness resulted in a site selection process which focused on major constraints, differences among options and public and agency concerns;

o the site selection process was designed to provide a second level of protection of the environment beyond that provided by the design and operating procedures of the facilities. As a result the site selection process focussed on locations which minimized the potential for off- site releases of contaminants, which maximized the potential for the detection, containment and clean-up of contaminants, and which minimized the potential for the exposure of contaminants to people;

o the principle of likelihood of suitability meant that in Phase 3B emphasis was placed on areas or sites expected to have the greatest suitability when more detailed investigations are undertaken;

o the desirability of maintaining a diversity of siting choices resulted the retention of a diversity of siting opportunities with each successive stage in the process.

Site Selection Goals, Objectives and Factors

Three site selection goals were formulated to guide the process of identifying candidate sites. These goals, ranked from most to least important, are:

- To select a site which minimizes risk to human health;
- To select a site which minimizes environmental impact;
- To minimize financial costs to OWMC.

The three goals addressed broad areas of consideration in candidate site identification. The goals were subdivided into a large number of more specific objectives. With the goal of minimizing environmental impacts, for example, the objectives specify different elements of the environment to be protected. The site selection objectives are listed in Appendix A of Volume 1 of this report. The site selection goals and objectives pertain to all three stages of the Phase 3B site selection process.

Factors are the detailed criteria used to exclude unsuitable areas and to compare alternative sites and access routes during the three stages in the Phase 3B site selection process. The definition and significance of each factor, its relationship to the site selection objectives and the way it was applied is detailed in Volumes 1, 2 and 3 of this report.

Facilities Characteristics Assumptions

It was necessary to make a series of assumptions regarding the characteristics of the three facility components (incinerator, physical chemical treatment plant and landfill) and the potential effects which might result from the placement of these components in different environmental settings. The facilities characteristics assumptions served the following roles:

- the determination of site sizes and buffer and study areas around sites and along access routes to sites;
- the determination of access routes and modes, e.g. truck transport to sites and the potential for impacts associated with the transport of special wastes and additives to facility components;
- the determination of facility characteristics, such as the incinerator stack height, which could potentially interfere with adjoining uses such as airports;
- the determination of the general operating characteristics of the facility components and the resultant implications for environmental quality and biological, land use, social and agricultural resources and uses;
- the determination of waste characteristics to the extent necessary to identify which environmental conditions, e.g. silt-clay soil depth and consistency, provide a second level of environmental protection.

The Phase 3B site selection process focussed only on those facilities characteristics relevant to the determination of area or site suitability.

The facilities characteristics assumptions employed in the Phase 3B site selection are highlighted in the Premises section of this summary. A complete listing of these assumptions is provided in Appendix A of Volume I.

Roles and Responsibilities

The major responsibilities of Dillon's site selection staff included:

- the formulation of site selection principles, objectives and general evaluation frameworks and methods;

- the management and synthesis of the other site selection consultants' contributions in the form of composite maps and tables;

- the coordination of the activities of the site selection team;

- the incorporation into the site selection process of Dillon and OWMC engineering contributions;

- the incorporation into the site selection process of public concerns and comments provided through the OWMC public consultation program;

- the presentation of the site selection team's conclusions to the OWMC management and the coordination of the consultants' responses to the comments and suggestions of the OWMC management;

- the technical documentation of the role of the site selection consultant team in the Phase 3B site selection process and the coordination of document preparation by site selection consultants. The consultants' technical reports were completed several months after the release of the OWMC Phase 3 Report. The consultants continued to refine, supplement and document their analyses during this period. These refinements and elaborations did not result in any changes in the Phase 3B conclusions and recommendations.

The major responsibilities of the other site selection consultants included the following:

- the review of the procedures and methods formulated by Dillon staff;

- the identification of factors for each stage in the Phase 3B site selection process;

- the collection and analysis of data;

- the preliminary ranking of factors;

- participation in the overall ranking and application of factors;

- the preparation of documents detailing their respective roles in the Phase 3B site selection process;

- the review of Dillon's Phase 3B site selection report.

The major responsibilities of OWMC in the Phase 3B site selection process included the following:

- the provision (in conjunction with the Dillon engineering staff) of facilities characteristics data and assumptions;

- the formulation and administration of the OWMC public consultation program, with advice from the site selection consultants;

- the coordination of all consultant contacts with agencies and the public;

- the overall management and administration of the site selection consultants' activities;

- the review of the site selection consultants' analyses, conclusions and recommendations and all decisions arising from the consultants' conclusions and recommendations.

Site Selection Process

As previously noted the site selection process was divided into three stages:

- the identification of site areas (constraint mapping);

- the identification of potential sites (site screening);

- the comparison of potential sites and the selection of candidate sites (initial comparative evaluation).

All three stages involved the identification of factors, the collection and analysis of data in accordance with the factors, the ranking of factors (in terms of their relative suitability for the establishment of facility components), and the application of factors to progressively exclude unsuitable and relatively less suitable areas and sites.

An overview of each of these steps is provided below:

The site area identification step involved the preparation of a series of 1:50,000 scale constraint maps. The data for these maps were based on secondary source materials, air photo interpretation, some agency contacts and preliminary field checks. Two sets of maps were prepared - one for standard landfills and fully integrated facilities and one for physical chemical treatment plant and/or incinerator facilities[1].

Areas were excluded when they had the following characteristics:

- failure to provide second level of environmental protection;

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[1] Fully integrated facilities are composed of a landfill, an incinerator and a physical chemical treatment plant. Site areas suitable for fully integrated or landfill facilities are indicated by the prefix LF. Partially integrated facilities are composed of an incinerator and/or a physical chemical treatment plant. Site areas potentially suitable for such facilities are indicated by the prefix PI.

- probability of major potential risk or impact that was really not readily mitigatible;

- sufficient confidence in the accuracy of the data regarding severe constraints to exclude unsuitable areas.

An additional consideration was the principle of maintaining a diversity of siting choices for subsequent site selection stages.

The factor application process took place in a series of steps based on four levels of suitability ranging from most to least suitable. Tentative decisions were reached by the site selection team regarding the application of factors. Preliminary composite constraint maps were then prepared by the Dillon site selection staff. The results were reviewed by the site selection team and OWMC to determine if an adequate diversity of siting choices was maintained for subsequent site selection stages. If the site selection team concluded that the subsequent stages of site selection would be seriously restricted (from a maintenance of choice perspective) the application of factors was modified to broaden the range of siting opportunities.

The product of this process was 152 site areas - 65 landfill/integrated site areas and 87 physical/chemical treatment and/or incinerator site areas.

The potential site identification step took place in a series of four screens. The first screen - initial suitability screen - took place at a scale of 1:50,000 using secondary source data interpreted on a site area by site area basis. The remaining three screens - the suitability screen, the compatibility screen and the systems screen took place at a scale of 1:10,000. These latter three screens employed data obtained from preliminary roadside field checks of site areas and the immediate vicinity of site areas.

Site areas were excluded during the initial suitability screen as a result of various combinations of significant environmental units (SEUs), sensitive crops, major roads, railways and transmission lines, confirmation of previously identified constraints and site size and configuration constraints.

The first part of the suitability screen (major impacts) excluded site areas based on constraints sufficiently severe to warrant rejection without reference to other site area ratings. With the second part of the suitability screen (relative suitability) a site area was only excluded if there was a major constraint, a high level of confidence in the data, and no major off-setting benefits not possessed by other site areas with less severe constraints.

The site selection team concluded that the large number of PI site areas in the east-central portions of the Niagara Peninsula should be treated as a group and compared. In this way the relative differences among those site areas could be used as a basis for selecting potential sites. The major considerations employed in the first of these screens, the compatibility screen, were land use compatibility (as represented by official plan designations) and agricultural capability and use. The geographic proximity of PI and LF site areas and the general nature of uses along access routes between such site areas were the major considerations employed during the final screen - the systems screen.

Throughout the latter three screens, the consultants' ratings of site areas (on the basis of the four level of suitability) were employed to address the maintenance of choice site selection principle. Thus if consideration was being given to rejecting a site because of an unfavourable rating by one consultant, the opportunities potentially lost, as represented by favourable ratings by the other consultants, were reviewed first.

The candidate site identification step began after the potential site identification step had reduced the number of potential site areas to ten landfill site and six physical/chemical treatment plant/incinerator plant sites.

Before it was possible to compare siting options (a single integrated facility or the two sites which together make up a partially integrated facility), it was first necessary to define the major components of each option. This meant a preliminary identification of preferred access route(s) from the 400 series highways to and between the site(s). The process of comparing access route options began with a ranking of the access route factors. The relative differences among the access route options were then determined on the basis of a series of local and regional access route factors. Each site selection consultant used the differences among the access routes as a basis for ranking the access routes from most to least suitable. The rankings of factors and access routes, together with tables containing detailed data on the access route options, were then used by the site selection team to reach conclusions regarding preferred access route(s).

A second part of the process of defining the major components of each option was the comparison of parcel options. Parcel options are different portions of a site potentially suitable for the establishment of the facility components. If one portion of the site were selected, the site could be reduced in size by excluding the less suitable portion of the site. It was concluded that a parcel should only be dropped from further consideration in the event that it was clearly less suitable than the retained portion and it appeared highly unlikely that there would be a need for flexibility in the placement of the facility components on the site. Where a clear choice could not be made between parcel options the relative difference in site size was taken into account in the comparison of siting options.

The initial comparative evaluation of siting options begin with the preparation of a series of composite constraint maps and composite matrices. The matrices specified the relative differences among siting options for over 100 indicators. Indicators are a more precise means of measuring or describing a factor. Each factor was composed of a number of indicators. The matrices compared sites using site, site vicinity (features within approximately a kilometre of the potential emissions area of each site), site region (a study area extending approximately five kilometres outward from each site) and local and regional access route factors and indicators. In addition to the detailed maps and matrices, the relative differences among the siting options were highlighted in two summary tables and in a table which summarized the overall ratings for each siting option.

The individual consultants initially ranked their factors (from highly suitable to highly unsuitable) and then rated the options in terms of these various levels of suitability. The consultants' analyses were combined into an overall factor ranking system and an overall rating of siting options.

The general approach employed to compare the siting options was to use the overall rating table as a means of structuring the evaluation process. Siting options rated as Level 5 (severe relative risk) were reviewed first. The concerns which led to the rating(s) were reviewed to determine if they were sufficient by themselves to warrant the rejection of a siting option. If there was doubt regarding the potential acceptability of a siting option, consideration was given to such matters as the other (especially risk-related) ratings for the siting options, the diversity of siting choices remaining, the level of confidence associated with the rating, and the potential for overcoming or significantly reducing the potential risk or impact.

Siting options rated as Level 4 (major relative risk or impact) were then reviewed. Again, particular consideration was given to risk-related concerns. No siting options were eliminated exclusively on the basis of a Level 4 ranking. In all cases, consideration was given to all the other ratings, the diversity of siting choices remaining, the level of confidence associated with the data employed for rating purposes and the potential for mitigation.

Siting options receiving ratings more favourable than Level 4 were then considered. Particular attention was devoted to siting options possessing a number of relatively favourable ratings, e.g., Level 1 or Level 2, to determine if it was possible to move directly to the selection of a preferred siting option.

The analysis of the siting options involved a review of the summary ratings, the data specified in the summary and detailed matrices and maps, the more detailed analyses contained in the other site selection reports and the concerns and issues raised through the OWMC public consultation program.

The product of the initial comparative evaluation step was the identification of eight candidate sites considered suitable for detailed comparative evaluation in Phase 4A of the OWMC search process.

PREMISES

Facilities Characteristics Assumptions

The facilities characteristics assumptions used in the Phase 3B site selection were provided by Dillon and OWMC. The Dillon work on facilities characteristics is detailed in their report Site Selection Process, Phase 3B Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones, 1984a.

Some of the key facility characteristics assumptions employed in the Phase 3B site selection include the following:

- facility composed of a landfill, an incinerator (stack height between 40 and 100 metres) and a physical/chemical treatment plant; facility components arranged as either a total integrated (all three components at one site) or partially integrated (incinerator and physical chemical treatment plant at one site and landfill at a second site);
- facility having an initial capacity of 150,000 tonnes/annum and an ultimate capacity of 300,000 tonnes/annum: with the initial capacity of 150,000 tonnes, 124,200 tonnes/per annum of treated residue transferred to the landfill;
- thermal destruction of organic wastes, physical chemical treatment of inorganic wastes, and total solidification of residues from thermal destruction and physical chemical treatment; only treated solidified residues placed in landfill;
- distribution of special waste quantities based on analyses undertaken on behalf of OWMC; primary transportation mode - trucks; volume of greater than 60 trucks per day at the initial capacity of 150,000 tonnes;
- adherence to all Provincial standards regarding emissions;
- general operating characteristics and appearance of incinerator and physical chemical treatment plant comparable to a heavy and a medium industrial use respectively; general operating characteristics of landfill comparable to solid waste landfill; many of the operating characteristics of a solid waste landfill, e.g. potential for methane gas migration, birds and flying papers not present with landfill for treated solidified residues;
- site size for integrated facility 112 hectares (277 acres), 80 hectares (198 acres) for incinerator/physical chemical treatment plant facility; 110 hectares (272 acres) for separate landfill; operating area of the physical chemical treatment plant/incinerator

- 11 hectares (27 acres); probable source of emissions (based on accident scenario used to develop buffer area requirements) located in an area 150m by 50m in the centre of the operations area.

Other Site Selection Consultants

This report synthesizes the site selection activities of a team of consultants specializing in such fields as hydrogeology, surface drainage, biology, agriculture, air dispersion and air quality, land use planning, social and economic analysis, transportation planning and engineering. The references for the technical reports prepared by these consultants are listed in Volume 1 of this report.

Public Consultation

The public comments and concerns considered during the Phase 3B site selection program were obtained from the public consultation program formulated and managed by the Ontario Waste Management Corporation in consultation with the site selection team. The site selection consultants participated in the development and implementation of those components of the OWMC public consultation program which pertained to site selection.

POSTULATES

The site selection goals, objectives and principles guided and shaped the Phase 3B site selection process.

The general approach employed in the use of facilities characteristics information was to focus on characteristics influencing the relative suitability of areas or sites. It was considered desirable to maintain as much flexibility as possible in the detailing of facility characteristics. In this way design and operational adaptations can be introduced in response to the characteristics of the candidate sites and the areas surrounding the sites.

The retention of a degree of flexibility in the identification of facility characteristics was also considered desirable because it allowed for refinements in the analysis of waste quantities, characteristics and distribution and in the evaluation of technological and operating options. Where it was not possible to precisely specify a particular facility characteristic the siting process was designed to retain areas or sites which were especially suitable for a range of facility characteristics.

The site selection process was designed to be iterative in nature. Thus as each stage on the process was completed, the implications of the analysis for previous Phase 3B site selection stages was considered. In addition, the implications of the analysis and conclusions for future site selection stages was addressed through the consideration of the extent to which a diversity of siting opportunities was being maintained.

Although summary tables were used to assist in structuring the consideration of areas and sites, final conclusions were based on the analyses and interpretations of all the site specific data available.

STATUS OF DATA

General

The data employed in the Phase 3B site selection were largely obtained from secondary sources, air photo interpretation, agency interviews and preliminary roadside field checks. The Phase 3B information base consists of data obtained by the other site selection consultants. As such, any comments and qualifications in their reports regarding the status of data also apply to this report.

The Phase 3B data collection, analysis and interpretation process focussed on the following:

- readily available and accurate data sources;
- concerns and considerations bearing on the site selection goals of minimizing risk to human health and minimizing adverse environmental impacts;
- features and environmental characteristics which represented major adverse risks or impacts (sufficient for the exclusion of areas or sites);
- potential risks and impacts which represented major differences among options;
- potential risks and impacts which would be difficult to overcome or significantly reduce;
- major public and agency concerns which varied among options.

Site Area Identification

The data employed during site area identification were obtained from secondary sources, agency contacts, air photo interpretations and preliminary field checks. The data collection process focused on major positive or negative siting considerations which could be used to either identify suitable areas or to exclude unsuitable areas. The site area identification process was limited to data which could be mapped with precision at a scale of 1:50,000.

Potential Site Identification

Data collection, analysis and interpretation in potential site identification took place in two steps. In the first step, data mapped at a scale of 1:50,000 were reviewed, refined and interpreted on a site area by site area basis. Some of the data (for non-exclusionary factors) obtained but not used during site area identification were employed during potential site identification because suitability was interpreted on an individual feature basis.

In the second part of potential site identification, data obtained from supplementary agency contacts and brief roadside investigations of site areas and the immediate proximity of site areas were employed. Data collection and analysis focused on major, readily identifiable potential risks and impacts. These constraints were mapped at a scale of 1:10,000.

Candidate Site Identification

Data collection and analyses during candidate site identification involved the more detailed consideration of site and site vicinity conditions. A wider area was examined in the vicinity of sites - approximately 500 metres beyond the boundary of the landfill and 1,000 metres outward from the potential emissions area of the PI site areas and PI components of integrated site areas. In addition, data were collected along local and regional access roads to sites and within a five kilometre radius of sites.

A broad range of data was also collected with the emphasis on relative differences among siting options. The major data sources used in candidate site identification included further and more detailed roadside field investigations, air photo and topographic map interpretation, secondary source analyses and further agency contacts. These data were compiled and analyzed through the use of models, composite maps and matrices, and summary data and rating tables.

The data collection, analysis and interpretation procedures employed during Phase 3B did not restrict the site selection process. In all cases, it was concluded that there was sufficient information for decision-making purposes. It was also concluded that the concerns and data sources not addressed or not fully addressed could be introduced into subsequent stages in the site selection process.

FINDINGS

Site Area Identification

The manner of applying the site area identification factors is summarized as follows:

Factors[1]	Application and Reasons
- physical resources such as flood plains and surface granular soils which fail to provide natural containment	- excluded for all facility components because of failure to provide second level of environmental protection
- concentrations of commercial and residential land uses, major recreation and community facilities, major airports, Indian reserves, specialty crops	- excluded for all facility components because of major impacts - Indian reserves outside Provincial jurisdiction
- higher capability/productivity agricultural lands	- more agricultural areas treated as exclusionary for incinerator/physical/chemical treatment components as more limited range of siting opportunities for landfill/integrated components - agricultural areas not excluded (except for specialty crops) for non-agricultural policy designations, on public lands, in areas with uncertain long-term future for agriculture (urban shadow) and in areas with very good accessibility (maximizes opportunities for sites with good accessibility and deep consistent silt-clay soils)
- physical resources such as lacustrine clay plain which provide natural containment	- not excluded because provides second level of environmental protection
- physical resources such as poor surface drainage	- not excluded because potential effects can be overcome
- biological resources	- not excluded because of variability in suitability among features and insufficient data for decision-making

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[1] A complete list of site area identification factors and their treatment is provided in Table 3.4 of Volume 1.

Factors	Application and Reasons
- non-agricultural land uses and designations, public lands and lower capability/productivity agricultural areas	- not excluded because positive siting considerations or potentially suitable
- local recreation and community facilities	- suitability can be readily checked at next site selection stage - not excluded because potential for closure or relocation

A total of 152 site areas were identified as a result of the site area identification process.

Potential Site Identifications

The manner of applying the potential site area identification factors was as follows:

Screen	Major Reasons for Rejection
Initial Suitability Screen	- major conflicts or severe impacts - 62 site areas dropped on the basis of site size and configuration, transportation and utilities, significant environmental units and confirmation of exclusionary factors
Suitability Screen (severe impacts)	- failure to provide second level of protection - severe impacts - 45 site areas dropped on the basis of natural containment, social, land use, agricultural, biological, transportation and site size and configuration factors
Suitability Screen (relative suitability)	- site areas dropped on the basis of major impacts and no offsetting benefits
Compatability Screen	- 3 pairs of adjoining PI site areas combined resulting in 3 less PI site areas

	- site areas dropped if no relative advantages over fully integrated site areas - site areas dropped if located in non-industrial locations and industrially designated sites with no other major disadvantages retained - 20 PI site areas dropped
Systems Screen	- more major constraints than retained site areas - more immediate access to LF site areas than retained site areas - 4 PI site areas dropped

Candidate Site Identification

The site selection team concluded that a total of eight of the sixteen potential sites should be dropped from further consideration during the candidate site identification process. Various combinations of these sites meant that a total of ten siting options were also rejected. The major reasons for these conclusions are as follows:

Siting Options	Major Reasons for Rejection
LF-3E (integrated) and LF-3E/PI-27E	- most hydrogeologically constrained site
LF-4N (integrated)	- most constrained site - air dispersion
LF-8C	- most constrained site - sensitive crops and livestock - less constrained sites agriculturally (LF 9C and LF 3C) with comparable advantages available
PI-2W/LF-10W and PI-2W/LF-11W	- conflict between incinerator stack and operations of Hamilton Civic Airport
PI-1A1/LF-2N	- PI-1A1 most constrained PI site - population levels - PI-1A1 marginal hydrogeology and relatively high transportation accident frequency
LF-10W (integrated)	- hydrogeologic and biological constraints and limited offsetting benefits

LF-11W (integrated)	- hydrogeologic and archaeological constraints and limited offsetting benefits
LF-1C/PI-18E	- major surface drainage constraint (not necessarily mitigatible) and major relative transportation risks. impacts and costs; dependence on planned highway (406) for access

The site selection team concluded that the remaining siting options should all be retained for further consideration. The major reasons for this conclusion were as follows:

Siting Options	Major Reasons for Retention
LF-3C and LF-9C (integrated)	° favourable hydrogeology ° highly suitable air dispersion, air quality and low population levels in area ° insufficient information on constraints to warrant rejection

Siting Options	Major Reasons for Retention
LF-1E (integrated)	° close proximity to QEW ° urban shadow location ° insufficient information on constraints to warrant rejection
LF-2N/PI-13N	° LF-2N - proposed industrial designation ° PI-13N - largely publicly owned ° favourable regional transportation access ° insufficient information on constraints to warrant rejection
LF-2N/PI-1N	° LF-2N - proposed industrial designation ° PI-1N - urban shadow location ° favourable regional transportation access ° insufficient information on constraints to warrant rejection
LF-4N/PI-1N	° PI-1N - urban shadow location ° favourable hydrogeology ° proximity of facility components ° favourable regional transportation access ° insufficient information on constraints to warrant rejection

LF-1E/PI-27E	• LF-1E urban shadow/PI-27E proposed industrial designation • immediate access from PI-27E to QEW • proximity of facility components • favourable hydrogeology • insufficient information on constraints to warrant rejection
LF-4N/PI-13N	• PI-13N - further removed (than PI-1N) from Niagara Escarpment • LF-4N - favourable hydrogeology • favourable regional transportation access • insufficient information on constraints to warrant rejection

CONCLUSIONS

The site selection team considered the procedures employed to identify site areas, potential sites and candidate sites to be consistent with the site selection goals, objectives and principles.

The portions of the candidate areas excluded during site area identification warrant exclusion from facility development based on the data available. The 152 site areas remaining after site area identification are relatively more suitable for facility development than the areas excluded. These 152 site areas also maintain a sufficient range of siting opportunities to proceed with the site area screening (potential site identification).

The 136 site areas rejected during the potential site identification warrant exclusion from facility development based on the data available. The six partially integrated site areas and the ten landfill site areas remaining after potential site identification are relatively more suitable for facility development than the site areas rejected. The sixteen potential sites offer an adequate diversity of siting opportunities to proceed with the initial comparative evaluation. Further reductions in the number of potential sites at this stage were not considered warranted based on the data available.

The eight potential sites rejected during initial comparative evaluation warrant exclusion from facility development based on the data available. The eight candidate sites remaining after candidate site identification are relatively more suitable for facility development than the potential sites rejected. The eight candidate sites offer an adequate diversity of siting opportunities to proceed with Phase 4A of the OWMC search process. Further reductions in the number of candidate sites are not warranted based on the data available.

RECOMMENDATIONS

It is recommended that a comparative evaluation be undertaken of the eight candidate sites. This analysis should include on-site and site vicinity investigations, interviews with local residents and businesses, and an exploration of community, regional, local access road and utility corridor risks, impacts and costs.

It is recommended that the design and operations analysis continue to be refined and integrated with the site selection process. It is suggested that particular consideration be devoted to those facility characteristics which vary by site and which could result in major potential risks, impacts and costs. In addition, it is recommended that the engineering analyses include the formulation of mitigative measures to prevent, or at least reduce, potential adverse effects.

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1. INTRODUCTION

1.1 PURPOSE

The Ontario Waste Management Corporation (OWMC) has implemented a five-step approach for the selection of an environmentally safe location or locations for the establishment of its special waste treatment and disposal facilities. These steps are as follows:

Step 1: Narrow the search to a geographic region in Ontario

Step 2: Identify candidate areas suitable for each facility component within this geographic region

Step 3: Identify candidate sites within candidate areas

Step 4: Evaluate candidate sites and select preferred site(s)

Step 5: Test and evaluate preferred site(s) in detail.

Step 1 is documented in the OWMC Phase 1 (1982) and Phase 2 (1983a) Reports. Step 2 (Phase 3A), the selection of 19 candidate areas within the geographic region is documented in the OWMC Interim Phase 3 Report (1983b) and Step 3 (Phase 3B) is documented in the OWMC Phase 3 report (1984a and b).

This volume represents the first of a four volume report. The report provides the technical site selection documentation for Step 3 (Phase 3B) - the process by which the candidate sites were selected within the candidates areas.

This volume describes the Phase 3B site selection process, the principles, goals and objectives which guided that process, and the general facilities characteristics assumptions which were employed for site selection purposes. It also documents the process by which site areas were identified within the candidate areas.

Volume 2 documents the procedures employed to identify potential sites within the site areas;

Volume 3 documents the process by which the potential sites were compared to produce a short list of candidate sites;

Volume 4, a map portfolio, contains the major maps which support Volumes 1, 2 and 3.

1.2 BACKGROUND

Step 1 in the search process is documented in the OWMC Phase 1 and Phase 2 Reports. The OWMC Phase 1 Report (1982) identified lands in southern Ontario where geologic and hydrogeologic characteristics were considered to offer a higher probability of locating sites suitable for OWMC facilities. The OWMC Phase 2 Report (1983a) identified the geographic region known as the Golden Horseshoe, an area where it was estimated that approximately 70% of Ontario's special waste is generated. Zones 1 and 2 within the geographic region were selected for further consideration. These zones were generally considered to have the most suitable geologic and hydrogeologic conditions for the natural containment of special wastes.

The selection of candidate areas involved the consideration of a range of factors including hydrogeology, atmospheric dispersion, surface water, transportation, land use, agriculture and population density.

The OWMC Interim Phase 3 Report (1983a) documented the selection of nineteen candidate areas within the geographic region. The report also indicated that further hydrogeologic investigations would be undertaken in a large area surrounding Metropolitan Toronto (Area A-1). As a result of these investigations a twentieth candidate area was subsequently identified and announced in January 1984. The twenty candidate areas are delineated in Figure 1.1.

As soon as the twentieth candidate area was identified, a level of investigations (for purposes of candidate site identification) was undertaken by the site selection consultants comparable to that already undertaken for the other candidate areas. The results of these investigations were then combined with the analysis undertaken for the other candidate areas.

In reviewing the results of the Phase 3A transportation analysis, an error and an inconsistency were identified in the plotting of the travel time contours which were used, in part, in the delineation of candidate area boundaries. The replotting of the travel time contours resulted in an extension of candidate areas 7, 8, and 17 southward (see Figures C.1 and C.2, Appendix C). This new area was also introduced into the candidate area identification process. Appendix C to this volume describes the results of this additional analysis.

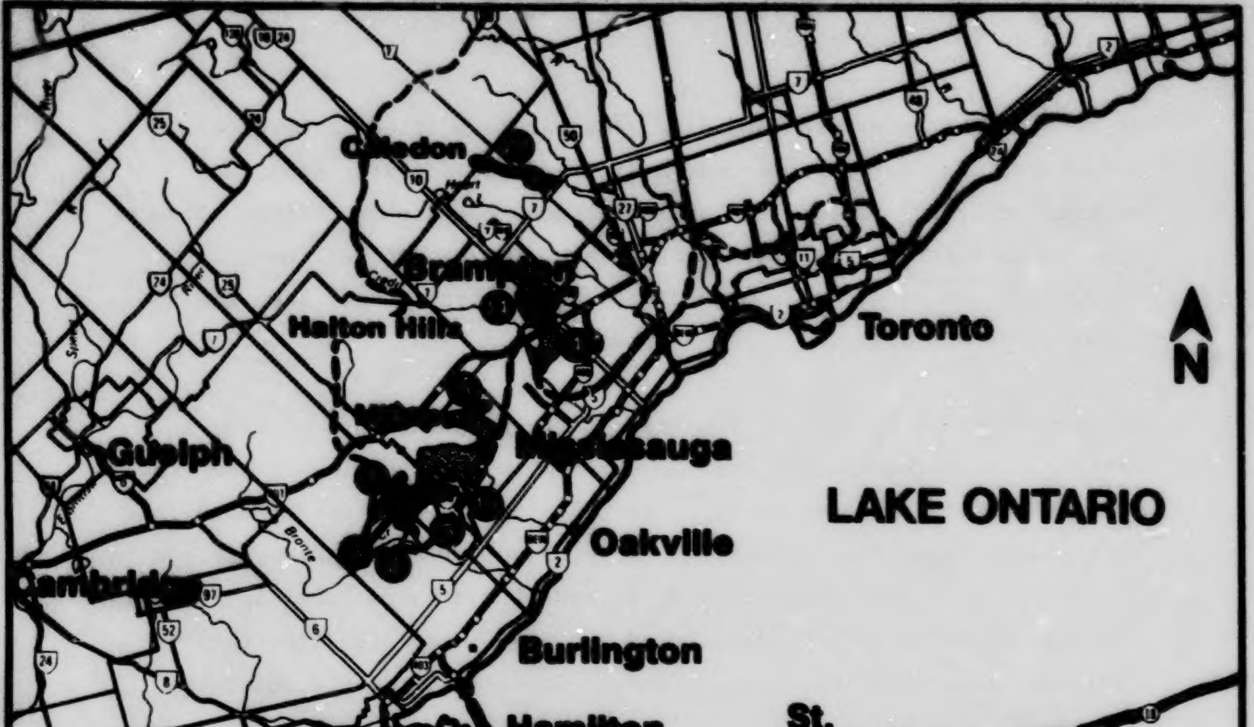
The site selection work undertaken since the Interim Phase 3 Report which led to the identification of site areas within the candidate areas is described in this volume.

1.3 SCOPE AND DIVISION OF RESPONSIBILITIES

This report both builds upon the Steps 1 and 2 site selection work and provides the detailed technical documentation to Step 3 of the site selection process. An overview of Step 3 is provided in the OWMC Phase 3 Report (1984a) and the OWMC Appendix to the Phase 3 Report (1984b).

This report was prepared by M.M. Dillon Limited (Dillon) on behalf of the Ontario Waste Management Corporation. Dillon Ltd. was technically

Figure 1.1 Candidate Areas SITE AREA IDENTIFICATION


Caledon
Brampton
Halton Hills
Toronto
N
Guelph
Mississauga
LAKE ONTARIO
Oakville
Cambridge
Burlington
Hamilton
St. Catharines
Niagara Falls
Welland
Fort Erie
Dunnville
Simcoe
Port Colborne
LAKE ERIE
Nanticoke
Boundary of Selected Geographic Region (Phase 2)

Legend — Components Included

Source: Ontario Waste Management Corporation, March 1984

Miles 0 10 Kilometers 0 10

- ■ Physical/Chemical Treatment Plant Only
- ■ Engineered Landfill & Physical/Chemical Treatment Plant
- ■ Physical/Chemical Treatment Plant & Incinerator
- ■ Integrated - All Components
- ● Candidate Area Numbers

responsible under the general guidance of OWMC for the coordination and synthesis of the Phase 3B site selection activities carried out by a team of consultants specializing in hydrogeologic, surface drainage, biological, land use, socio-economic, air quality, agricultural, transportation and engineering concerns. Each consulting firm prepared a separate technical report for each of these subject areas (see References) documenting its specific contributions to the site selection process. The names of the firms, the consultant coordinators, and the major areas of responsibility of each firm are listed in Table 1.1.

This report represents the integration of those contributions. Therefore, any limitations or qualifications identified in the other Phase 3B site selection technical reports also apply to this report.

The division of responsibilities among the various participants[1] in the Phase 3B site selection process generally took the following form:

- The site selection coordinating consultant (Dillon) formulated the general framework, the site selection procedures, and the site selection principles, goals and objectives, in consultation with the other site selection consultants and OWMC staff;

- Facilities characteristics assumptions were formulated by Dillon and OWMC engineering staff with advice and input from OWMC environmental staff and the site selection consultants. The Dillon engineering inputs are documented in the M.M. Dillon Limited report Site Selection Process, Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones (1984). Site selection is one component of a much broader Facilities Development Process being carried out by OWMC;

- The public consultation program for site selection was developed by OWMC with advice and input from the site selection consultants

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[1] This team of OWMC and consultant staff is referred to in this volume and in the other site selection consultants' reports as the "site selection team".

TABLE 1.1

SITE SELECTION CONSULTANTS

Firm	Coordinator	Major Area of Responsibility
Ecologistics Ltd.	D. Cressman	- agricultural resources and communities - urbanizing areas - specialty and sensitive crops (Deloitte, Haskins and Sells Associates)
Gartner Lee Associates Ltd.	G. Anderson	- geology - hydrogeology - biology - surface drainage (M.M. Dillon Ltd.) - atmospheric dispersion and air quality (Ontario Research Foundation) - archaeology and historical resources (Museum of Indian Archaeology)
Institute of Environmental Research Inc.	P. Homenuck	- social and economic impacts - community and recreational facilities - population levels - historical resources (P. McPhail, P. Dilse)

TABLE 1.1 (Cont'd)

SITE SELECTION CONSULTANTS

Firm	Coordinator	Major Area of Responsibility
Marshall Macklin Monaghan Ltd. (Leon Kentridge Associates Ltd.)	L. Kentridge	- land use - land use planning - land ownership - land value (Graydon Rodgers Appraisals Ltd.)
M.M. Dillon Limited	D. Lawrence (Sub-consultant to M.M. Dillon Limited)	- site selection co-ordination
M.M. Dillon Limited	W. Walker	- facilities characteristics and engineering inputs
M.M. Dillon Limited	J. Crosby	- transportation analysis

(see References for a list of OWMC Communications Departments' documents and materials considered);

- The site selection consultants identified a preliminary set of factors for each stage in the site selection process. These factors were synthesized by Dillon's site selection staff and, in turn, reviewed and refined jointly with the site selection consultants and OWMC staff;

- Contact lists and information requirements were formulated by the other site selection consultants. Contacting and documentation procedures were developed by Dillon's site selection staff and the environmental and communications staff of OWMC with input from the other site selection consultants;

- The site selection consultants carried out the collection and analysis of data. They also documented the data collection process, e.g. interview notes, data maps;

- Dillon's site selection staff formulated the overall procedures for the application of factors and factor rankings. The other site selection consultants put forward suggestions (together with the rationale for these suggestions) concerning the ranking of the factors within their areas of responsibilities;

- The suggestions for ranking were synthesized by Dillon's site selection staff. The ranking and application of factors took place in a series of working meetings coordinated by Dillon's site selection staff and involving the other site selection consultants and representatives of OWMC engineering, environmental and communications staff. Public and agency concerns and priorities identified through agency and public contacts were considered during these meetings.

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[1] Factors were ranked on the basis of their relative suitability for siting special waste treatment and disposal facilities.

- The process by which factors were ranked (in terms of the degree of constraint which they represented to siting) and the application of factors to identify site areas, potential sites and candidate sites took place in a series of steps. An initial application of factors was developed either by Dillon's site selection staff alone or in conjunction with the other site selection team members. Dillon's site selection staff then prepared working composite maps and tables. These maps and tables were employed by Dillon's site selection staff to reach tentative conclusions regarding factor application. These tentative conclusions were then reviewed and discussed with the site selection team in a series of working meetings;

- The maintenance of choice principle[1] addressed the question of whether the application of factors in a particular manner might or might not unduly restrict the range of siting choices for subsequent site selection stages.

- Once agreement was reached by the site selection team regarding factor application, recommendations were put forward to OWMC management. The final product of the discussions which resulted from OWMC management comments was a consensus between the site selection consultants and OWMC regarding the application of factors.

- The documentation process initially focused on the provision of sufficient information for OWMC decision-making. Sufficient additional data were then provided for OWMC to prepare the OWMC Facilities Development Process Phase 3 Report (1984a and b).

- Subsequent to the release of the OWMC Phase 3 Report, the site selection consultants prepared technical reports documenting their respective roles in the site selection process. The present report documents the role of the coordinating site selection consultant, Dillon. Draft reports were reviewed by the Dillon's site selection staff and by the OWMC environmental staff to ensure that the reports were mutually consistent and that the procedures employed and the conclusions drawn were fully substantiated.

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[1] The OWMC Phase 3 Interim Report defines the maintenance of choice principle as follows. "As exclusion and inclusion decisions are made, there must be the assurance at each step of the process that no significant or unique alternatives are being discarded". (OWMC, 1983b)

- Since the completion of the consultant's technical reports occurred after the release of the OWMC Phase 3 Report, the site selection consultants continued to refine, supplement and document their analyses. These refinements and elaborations did not result in any changes in the Phase 3B conclusions and recommendations.
- All site selection team conclusions, recommendations and reports were presented for approval to OWMC management. The site selection consultants concur with the subsequent decisions which were made by OWMC management.

1.4 FORMAT OF THIS VOLUME

This volume consists of three chapters:

- Chapter 1 (this chapter) is the Introduction;
- Chapter 2 describes the principles, goals, objectives, factors and the general facility characteristics and assumptions which guided the site selection process;
- Chapter 3 documents the process by which site areas were identified within the candidate areas;
- The appendices which support this volume are provided at the back of this volume.

2. GENERAL CHARACTERISTICS - PHASE 3B SITE SELECTION

2.1 INTRODUCTION

This chapter provides a description of the goals, objectives, principles and facilities characteristics assumptions which defined and shaped the Phase 3B site selection analyses. It also provides an overview of the major stages in the resulting site selection process. A more detailed description of the site selection process is presented in Chapter 3 of this volume and in Chapters 4 to 16 in subsequent volumes.

2.2 SITE SELECTION PRINCIPLES

A series of principles, intrinsic to the process of identifying candidate sites, was identified in the OWMC Phase 3 Interim Report (1983b). These principles are highlighted in Table 2.1. These principles also apply to the process of identifying candidate sites. The role which these site selection principles assumed in Phase 3B is highlighted in Table 2.1.

2.3 GOALS, OBJECTIVES AND FACTORS

2.3.1 Introduction

Goals and objectives represent the ends towards which the site selection process is directed. Goals address broad areas of consideration in site selection. Objectives are somewhat more specific. They represent a refinement and elaboration of goals. In the case of the goal of minimizing environmental impacts, for example, the objectives specify different elements of the environment to be protected.

The goals and objectives apply to the entire site selection process. Factors are the detailed criteria which were used to exclude unsuitable areas and to compare alternative sites and access roads. As the three stages in the Phase 3B site selection were undertaken at different levels

TABLE 2.1

Role of Site Selection Principles in Phase 3B

SITE SELECTION PRINCIPLES IDENTIFIED IN THE OWMC INTERIM PHASE 3 REPORT	ROLE IN PHASE 3B SITE SELECTION
Progressive Refinement of the Search Process The process must evolve in a series of steps which involve the evaluation of alternatives and narrowing of geographic focus.	° Phase 3B divided into 3 stages - site area identification - potential site identification - candidate site identification ° with each stage the level of detail increased and the geographic scope narrowed
Definition of the Environment The very broad and inclusive definition of the environment used in the Ontario Environmental Assessment Act (1975) has been adopted by OWMC. [1]	° wide range of considerations encompassed by site selection goals, objectives and factors
Protection of Human Health and the Environment The primary considerations must be protecting human health and the environment.	° factors related to protection of human health and the environment generally rate higher than factors pertaining to cost
The Involvement of Those Affected Affected agencies, organizations and people must be consulted at key decision points in the process. OWMC is committed to a thorough consultation program.	° general concerns raised through public meetings, information centres, submissions and phone calls incorporated into site selection process

[1] Although OWMC has adopted the definition of the environment contained in the Environmental Assessment Act, the activities of the OWMC are not subject to the requirements of that Act.

TABLE 2.1

Role of Site Selection Principles in Phase 3B

SITE SELECTION PRINCIPLES IDENTIFIED IN THE OWMC INTERIM PHASE 3 REPORT	ROLE IN PHASE 3B SITE SELECTION
The Involvement of Those Affected (Cont'd)	° public inputs to identification, ranking and application of factors obtained through a series of site selection workshops
Efficiency and Effectiveness of the Process The costs and time involved in conducting a detailed analysis and evaluation of every conceivable site across the province are prohibitive. Resources must be used to effectively and efficiently conduct a systematic search and selection process which focusses available resources on critical concerns and provides definite conclusions in a timely manner.	° focused analyses on major constraints and differences among options ° focused analysis on issues of particular agency and public concerns ° level of detail to which analysis undertaken at different stages reflected resources and time available
A Second Natural Level of Protection of the Environment A second level of protection of the environment beyond that provided for by the design and operating procedures of the facility component is essential.	° policy of OWMC - design and operations of the facility provides a first level of protection for the environment through such measures as encouraging the minimization of the wastes generated, use of best proven technology, facility component design, construction procedures, encouraging appropriate control procedures, operational procedures and occupational health and safety procedures

TABLE 2.1 (Cont'd)

Role of Site Selection
Principles in Phase 3B

SITE SELECTION PRINCIPLES IDENTIFIED IN THE OWMC INTERIM PHASE 3 REPORT	ROLE IN PHASE 3B SITE SELECTION
A Second Natural Level of Protection of the Environment (Cont'd)	° no combination of engineering measures can however eliminate potential for human health effects; remote possibility of release and some uncertainty regarding long term health effects ° site selection approach therefore provided second level of protection by: - minimizing potential for an accidental release on site or in transit, e.g. by minimizing transportation risks - maximizing the potential for the detection, containment and clean-up of special wastes in the event of accidental release, e.g. favouring soils with depths and consistency which facilitate natural containment - minimizing potential for exposure of contaminants to people and/or avoiding pathways of contaminants and people, e.g. avoiding settings with large numbers of residents in close proximity to possible sites

TABLE 2.1 (Cont'd)

Role of Site Selection

Principles in Phase 3B

SITE SELECTION PRINCIPLES IDENTIFIED IN THE OWMC INTERIM PHASE 3 REPORT	ROLE IN PHASE 3B SITE SELECTION
Likelihood of Suitability Because the factors addressed at this stage are at a broad regional scale, the suitability of a selected candidate area can be expressed at this stage only as a relative likelihood of suitability subject to later, more detailed investigations.	° emphasis devoted to areas or sites likely to have greatest suitability when more detailed investigations undertaken ° lower priority to sites or areas which offered a relatively greater potential of proving to be unsuitable if more detailed investigations undertaken
Maintenance of Choice As decisions or exclusions are made, there must be the awareness at each stage of the process that no significant or unique alternatives are being discarded.	° for critical tradeoffs where uncertainty regarding preference, retention of sites which exhibited both sets of characteristics ° consideration of need to retain range of sites for factors not yet considered ° no sites or areas absolutely eliminated in Phase 3B; such final decisions will only be made once the site selection process is complete and OWMC is satisfied that a safe site has been identified

of detail, different factors were used for each stage in the site selection process. An overview of the goals, objectives and factors employed in candidate site identification is provided in the following subsections.

2.3.2 Goals

Three site selection goals have been developed and adopted by OWMC to guide the process of identifying candidate sites. These three site selection goals, ranked by OWMC in the following order of importance (from most to least important) are:

1. To select a site which minimizes risk to human health;

2. To select a site which minimizes environmental impact;

3. To minimize financial costs to OWMC.

Although this ranking reflects the general priorities of OWMC and the public, it was also recognized by the site selection team that there would be instances where relatively minor risk-related concerns would be superceded by major environmental impacts. Similarly, a major cost consideration might supercede a minor risk or environmental impact consideration.

An elaboration of each of these three site selection goals is provided in the following subsections.

a) To select a site(s) which minimizes risk to human health.

In general terms risk is concerned with the likelihood and severity of adverse consequences. With respect to hazardous waste management facilities and potential impacts on human health, risk refers to the likelihood of human health consequences resulting from a release of contaminants during the transportation to or operations of the facility components.

The site selection process in Phase 3B contributed to the minimization of risk to human health in two respects. The site selection process considered the "pathways" or "media" by which contaminants might move through the environment in the event of a release. Such "pathways" include ground and surface water systems, agricultural uptake, air dispersion, transportation and area or site characteristics which might inhibit monitoring or contingency operations.

As previously noted, the likelihood of human health effects under any circumstances is expected to be extremely remote. However, the general reasoning used in the site selection process has been - where a choice exists it is preferable to select sites which can, by virtue of their characteristics and location, further contribute to the minimization of risk.

b) To select a site(s) which minimizes environmental impact.

The "environment" encompassed by this goal is extremely broad. It includes biological, physical and other natural resources, land use, land ownership, and social and economic concerns and considerations. Impacts on sites, in the vicinity of sites and along access routes to sites were taken into account. Potential local and regional, as well as short and long-term impacts, were considered.

The application of the goal of minimizing environmental impact varied considerably depending on local and site characteristics as well as agency and public concerns and preferences. A function of the site selection process has been to avoid, or at least minimize adverse environmental impacts with the emphasis on identifying those potential impacts which are the most significant and the least amenable to mitigation. Particular attention has been devoted to identifying sensitive and significant aspects of the natural and social environment to assist in this process.

c) To minimize financial costs to OWMC.

As a public agency responsible for the expenditure of public funds, it is a responsibility of OWMC to minimize, where feasible and prudent, expenditures. It is also the responsibility of OWMC to expend funds in the most efficient and effective manner possible.

With regard to the site selection process this goal encompasses the consideration of such potential areas of expenditure as: site acquisition, on-site development costs, off-site development costs and facility operations costs. Although considered, transportation costs are not expected to be a direct cost to OWMC.

The consideration of financial costs in site selection does not necessarily mean that financial considerations will outweigh risk and impact-related considerations. Although minimizing cost is ranked as the lowest priority goal it was recognized that there would be instances where a minimal reduction in risk or impact would have substantial financial implications for OWMC.

2.3.3 Objectives

A large number of objectives were developed by the site selection team to assist in shaping and direct[illegible] the site selection process. These objectives are subdivided into the following subject areas and are presented in Table A1.1 in Appendix A.

Risk to Human Health

- Site - Pathways into the Environment
- Site - Human Exposure
- Transportation and Discharge - Pathways into the Environment
- Transportation and Discharge - Human Exposure

Minimize Environmental Impact

- Physical and Biological
- Resources
- Land Use and Land Ownership
- Social
- Economics

Cost

- Capital Costs
- Operating Costs

The site selection objectives were developed and derived from a variety of sources including public and agency comments and concerns, experiences with comparable projects, and the concerns of OWMC management, staff and consultants.

By the time the site selection process is completed all the objectives will have been addressed. However, because of differences in the functions of various steps in the site selection process, e.g. eliminating unsuitable areas, as well as variations in scales and levels of detail, different objectives were addressed at different stages in the site selection process as well as at varying levels of detail.

It was recognized that no site would satisfy completely all the site selection objectives. With any given site or area under consideration, some objectives would be satisfied and other objectives would not be satisfied or would only be partially satisfied. Thus, in the process of identifying and comparing potential sites, consideration was given to differences in the satisfaction of various objectives. For example, tradeoffs had to be made between facility locations in areas of potential environmental significance as against locations on lower capability agricultural land. The consideration of such "tradeoffs" was necessary to decisions regarding the relative suitability of alternative areas and sites.

The site selection objectives have not been ranked as it was recognized that the relative importance which is attached to any given objective would vary depending on the stage in the site selection process as well as the characteristics of the areas and sites under consideration at each stage. The factors employed in each stage have, however, been ranked.

2.3.4 Factors

A large number of factors were employed in the Phase 3B site selection process. The process for identifying, ranking and applying factors for the identification of site areas is described in Sections 3.3, 3.4 and 3.5 of this volume. The process for identifying, ranking and applying factors in potential site identification and candidate site identification is described in Volumes 2 and 3 respectively of this report.

2.4 FACILITIES CHARACTERISTICS ASSUMPTIONS

2.4.1 Information Base

The general assumptions regarding facilities characteristics employed in Phase 3B were based on M.M. Dillon Limited's Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones report (1984a) and other engineering analysis undertaken by or on behalf of the Ontario Waste Management Corporation. The Facilities Development Process, which has addressed such issues as waste quantities, the choice of technologies and the major characteristics of the facilities, has proceeded in parallel with the site selection process. A number of the key facilities characteristics assumptions employed for site selection purposes are identified in the OWMC Phase 3 Report and Appendices (OWMC, 1984a and b).

2.4.2 Focus of Analysis

The general approach employed by the site selection team in the identification and incorporation of facilities characteristics information into the site selection process was to focus only on those characteristics which would influence the relative suitability of areas or sites. It was considered desirable by OWMC to maintain as much flexibility as possible in the detailing of facilities characteristics. In this way design and operational adaptations can be introduced in response to the characteristics of the candidate sites and the areas surrounding the sites.

The retention of a degree of flexibility in the identification of facilities characteristics was also considered desirable by OWMC as it allowed for refinements in the analysis of waste quantities, characteristics and distribution and in the evaluation of technological and operating options. Where it was not possible to precisely specify a particular facilities characteristic the siting process was designed to retain areas or sites which were especially suitable for a range of facilities characteristics.

In many instances it was considered possible to overcome or significantly reduce a potential adverse impact through site specific mitigative measures. Where there was some uncertainty regarding their effectiveness, complete dependence was not placed on such measures in the Phase 3B site selection process. In this way the choice among potentially suitable sites was not totally dependent on mitigative measures - measures which might subsequently not operate as effectively as anticipated.

In considering buffer or separation requirements from various sensitive uses, a series of very unlikely "accident scenarios" were developed by Dillon's engineering staff and employed in the site selection analysis. With this approach it was felt by the site selection team that refinements in facilities characteristics would be less likely to necessitate the rejection of sites previously identified as suitable. The introduction of mitigative measures would then serve to further enhance the relative and absolute suitability of retained sites.

2.4.3 Assumptions

Table A1.2 in Appendix A highlights the major facilities characteristics assumptions which were employed in the Phase 3B analysis. A more specific description of how these assumptions were employed is contained in subsequent chapters of this report, as well as in the individual site selection consultants' reports listed in the References. A more detailed treatment of the subject of buffer and study areas is provided in a separate technical report - Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones (M.M. Dillon Limited, 1984a).

2.5 SITE SELECTION PROCESS

The design of the Phase 3B site selection process was based on the recognition of the importance of the systematic analysis and documentation of a wide range of siting alternatives consistent with the environmental assessment process as embodied the Ontario Environmental Assessment Act[1].

The site selection process was also a product of the site selection principles, goals, objectives and facilities characteristics assumptions detailed in the previous subsections.

The process of identifying candidate sites took place in 3 stages as illustrated in Figure 2.1.

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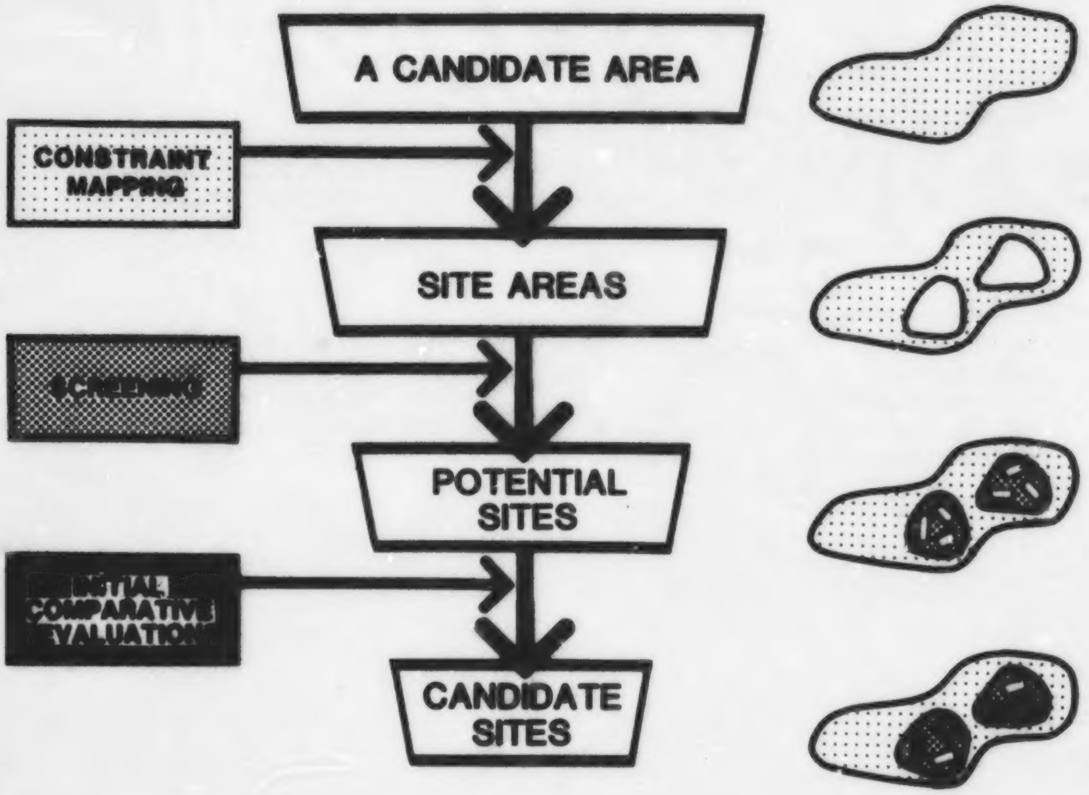
[1] Although consistency with the Ontario Environmental Assessment Act impacts assessment process played an important role in the design of the site selection process, the activities of the Ontario Waste Management Corporation are not subject to the requirements of the Ontario Environmental Assessment Act.

Figure 2.1: THE SELECTION OF CANDIDATE SITES


A CANDIDATE AREA
CONSTRAINT MAPPING
SITE AREAS
SCREENING
POTENTIAL SITES
INITIAL AND COMPARATIVE EVALUATION
CANDIDATE SITES

Source: Figure 13, OWMC Phase 3 Report March 1984

2.5.1 The Identification of Site Areas: Constraint Mapping

Site areas within the candidate areas were determined by identifying and then excluding areas considered unsuitable for the location of the three facility components - standard landfill, physical/chemical treatment plant and incinerator by means of a technique called constraint mapping.

2.5.2 The Identification of Potential Sites: Site Screening (Volume 2)

The screening stage began after constraint mapping had identified site areas warranting more detailed consideration. In this process, the remaining areas were progressively reduced in number and size until potential sites were identified.

2.5.3 The Comparison of Potential Sites and the Identification of Candidate Sites: Initial Comparative Evaluation (Volume 3)

The purpose of the initial comparative evaluation stage was to explore the relative differences among the potential siting options as a basis for reducing the number of potential sites under consideration.

The product of the initial comparative evaluation stage was a short list of candidate sites.

3. THE IDENTIFICATION OF SITE AREAS: CONSTRAINT MAPPING

3.1 SITE AREA IDENTIFICATION PROCESS

The identification of site areas within the candidate areas was the first of a three step process used to identify a short list of candidate sites. Constraint mapping was the technique employed to identify site areas within the twenty candidate areas.

The process by which site areas were identified is illustrated in Figure 3.1. Factors for use in constraint mapping were identified by the site selection team based on a review of relevant principles goals, objectives and facilities characteristics.

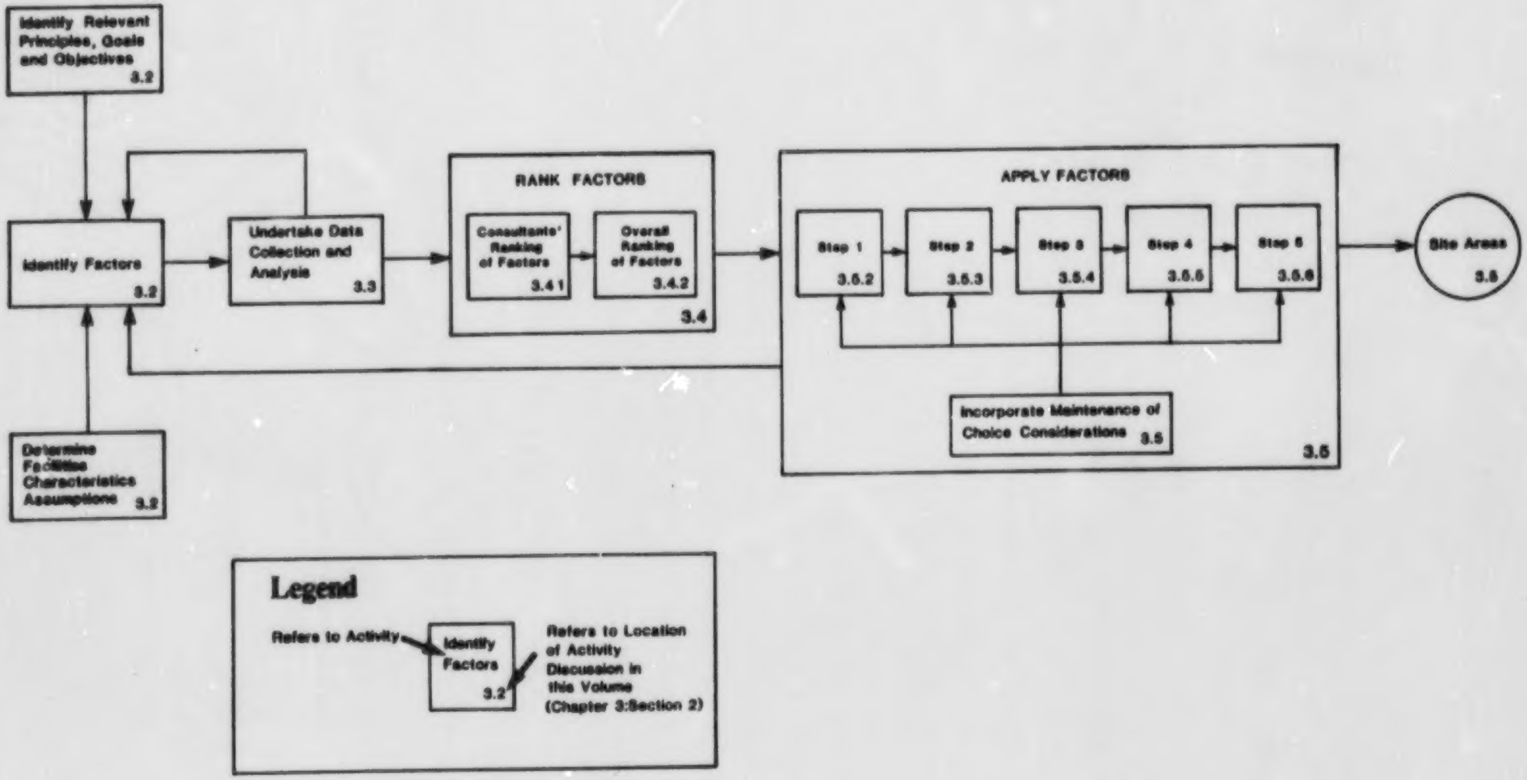
An extensive data collection process was undertaken by the other site selection consultants which involved some agency contacts, reviews of secondary source materials, air photo interpretations and preliminary field checks. As illustrated in Figure 3.1 this data collection and analysis process led to refinements in the site area identification factors.

Factors were ranked in a two step process. Initially the factors were ranked within disciplines by the consultants responsible. These individual consultant rankings were then combined by the site selection team into an overall ranking of factors.

The factor application process took place in a series of steps. The maintenance of choice principle and agency and public concerns influenced factor ranking and application.

Whenever there was any doubt regarding the treatment of a factor by the site selection team the affected area was retained for further consideration. The product of this process was 152 site areas which were considered suitable for more detailed consideration.

Figure 3.1 SITE AREA IDENTIFICATION PROCESS


Identify Relevant Principles, Goals and Objectives 3.2
Identify Factors 3.2
Determine Facilities Characteristics Assumptions 3.2
Undertake Data Collection and Analysis 3.3
RANK FACTORS
Consultants' Ranking of Factors 3.4.1
Overall Ranking of Factors 3.4.2
3.4
APPLY FACTORS
Step 1 3.5.2
Step 2 3.5.3
Step 3 3.5.4
Step 4 3.5.5
Step 5 3.5.6
Incorporate Maintenance of Choice Considerations 3.5
3.5
Site Areas 3.6
Legend
Refers to Activity
Identify Factors 3.2
Refers to Location of Activity Discussion in this Volume (Chapter 3:Section 2)

3.2 IDENTIFICATION OF FACTORS

3.2.1 Preliminary Identification of Factors

The factor identification process began with a preliminary identification of possible factors by the site selection consultants. These preliminary factor lists were discussed at length in working meetings of the site selection team.

As input to this process, Dillon's site selection staff prepared tables which explored the relationship of goals and objectives to the site area identification factors. Table B1.1 in Appendix B identifies which site selection objectives were considered appropriate for use in the identification of site areas. The table indicates which factors pertain to which site selection objectives. A series of reasons for the selection of each factor is also provided.

Table B1.2 in Appendix B identifies which site selection objectives were not addressed at the stage of site area identification. The reasons for considering it more appropriate to address these objectives at subsequent stages in the site selection process are also provided in Table B1.2. The major reasons for objectives being addressed at this stage include the following:

- provides second level of protection;
- potential risk, impact or cost;
- suitable for mapping at a scale of 1:50,000 and for boundary delineation purposes;
- public or agency concern;
- varies across candidate areas;

- sufficient information for decision-making;
- does not need site-specific field investigations.

A further input to the factor identification process was the consideration of the relationship of potential factors and assumed facilities characteristics. The relationship of facilities characteristics assumptions and site area factor identification, ranking and application is highlighted in Table B1.3.

A final input to the factor identification process was the site selection principles. The roles which these principles assumed in site area identification are highlighted in Table B1.4.

On the basis of this process of factor identification and analysis a preliminary list of factors was identified by the site selection team.

As part of the process of refining and elaborating on the site identification factors, the other site selection consultants prepared separate factor sheets in accordance with a form laid out by Dillon's site selection staff. These factor sheets are contained in each firm's site selection reports.

These factor sheets include the following:

- a definition of the factor;
- the relevant facility component(s), e.g. standard landfill;

- the rationale/significance of the factor, e.g. why the factor is a siting concern in terms of its relationship to risks to human health and the protection of the environment;

- the sources of information used in the application of the factor;

- the methods employed to collect the data as well as a recommendation by the consultant concerning the severity of constraint to siting represented by the factor;

- the criteria or indicators employed to measure or delineate the boundaries of the factors on maps;

- any comments, assumptions or limitations associated with the factor.

3.2.2 Refinements to Factors Based on Data Collection and Analysis

The data collection and analysis undertaken by the other site selection consultants (see Section 3.3) led to further refinements in the site area identification factors based on such considerations as agency concerns, the availability of data, the presence of potential constraints not previously identified and the absence of potential constraints previously anticipated. The factors which emerged at the end of data collection and analysis are listed in Table 3.1.

Table B2.1 in Appendix B provides a summary definition and a description of the significance of each of these site area identification factors as prepared by the other site selection consultants. Factor significance was interpreted in terms of relevance to the two site selection goals of minimizing risk to human health and minimizing environmental impact.

Once the site area identification factors were tentatively identified the other site selection consultants prepared 1:50,000 scale maps delineating factor boundaries. Dillon's site selection staff then prepared composite constraint maps based on the conclusions which were tentatively reached by the site selection team regarding factor application.

3.2.3 Refinements to Factors Based on Maintenance of Choice Considerations

At this point the site selection team determined that the pattern of areas which had been identified as "not constrained" should be reviewed on the basis of the maintenance of choice site selection principle. As detailed in Section 3.5, in the deliberations which followed consideration was given to whether an adequate range of site areas were being retained for those factors which could not be introduced until subsequent stages of candidate site identification.

In most instances it appeared to the site selection team that a sufficient range of site areas was being retained and that the site selection process would not be unduly restricted. Such was not, however, the case with respect to transportation access, public lands, agricultural lands designated for industrial and other unspecified urban uses, and agricultural lands subject to urban influence.

The site selection team, therefore, concluded that four new site area identification factors should be introduced into the process - agricultural lands designated for industrial and unspecified urban uses, urban shadow, tonne kilometres of waste hauled and transportation accident probability index. Further consideration was also given to the previously identified factors of public and industrial lands. One aspect of this additional analysis introduced a review of a portion of the Niagara Peninsula (see Map 2 in Volume 4 - Map Portfolio) characterized by

TABLE 3.1

Factors Used in the Identification of Site Areas [1]

Physical and Biological Resources

- till and lacustrine clay plain;
- drumlin (Halton);
- drumlin (Niagara);
- drumlin field
- surface granular soil;
- moraine;
- poor surface drainage;
- wetland;
- stream course;
- flood plain;
- significant environmental units (SEUs);
- non-SEU woodlots greater than 20 ha.

Agriculture

- agricultural land capability;
  - class 1 and 2
  - class 3
  - class 4
  - class 5, 6 and 7
- agricultural cropping system.
  - specialty crops
  - row crops and corn-wheat systems
  - mixed and/or cereal grain, hay-grain or hay (good quality) systems
  - hay (poor quality), pasture and grazing systems
  - non-agricultural land uses

Land Use and Land Ownership

- industrial lands, designated in official plans, built upon;
- industrial lands, designated in official plans, internal roads and services but not built upon;
- industrial lands, designated in official plans, vacant;
- residential lands, designated in official plans, built upon;
- residential lands, designated in official plans, internal roads and services but not built upon;
- residential lands, designated in official plans, vacant;
- residential development in rural and agricultural areas;
- commercial lands, designated in official plans, built upon;
- commercial lands, designated in official plans, vacant;
- provincial planning areas;
- rural designations, official plans;
- publicly owned lands;

[1] Excludes modifications to factors to ensure diversity of siting opportunities - see Table B2.2

TABLE 3.1 (Cont'd)

Factors Used in the Identification of Site Areas [1]

Community and Recreation Features [2] • hospital; • nursing home; • home for the aged; • institution for the disabled; • regional shopping centre; • public building (court house, regional police headquarters, government office); • school • special education facility; • post-secondary education facility; • conservation area; • park (regional, municipal, private) • golf course; • commercial recreation facility; • community centre; • cultural centre; • museum; • theme park; • fairground/exhibition; • campground; • public sports facility; • private sports facility.
Transportation • airports.
Indian Reserves

[1] Excludes modifications to factors to ensure maintenance of choice opportunities.

[2] List does not include features initially defined for which no example were identified.

TABLE 3.2

Additional Site Area Identification Factors - Access Route Comparisons

Human Environment

Transportation Safety

- Proximity to freeways
- Transportation accident frequency

Existing Residents

- Distances through built-up urban areas
- Number of communities by population
- Number of residences

Existing Resources

- Number of active farm complexes

Existing Community and Recreation Features

- Number of community features
- Number of recreation features

Future Residents

- Distance through residential land use designations

Physical and Biological Environment

- Crossings of sensitive lands
- Stream crossings

(apparently) relatively favourable regional access as well as relatively deep consistent silt-clay soils. The additional factors which were employed in this further analysis are listed in Table 3.2.

They are also defined and their significance described in Table B2.3 in Appendix B. As described in Section 3.6 these factors were employed by the site selection team in combination with existing factors to identify a sufficient range of sites to proceed to the next stage in the candidate site identification process.

Table B1.5 identifies the additional site selection objectives which are pertinent to these factors. Table B1.5 also provides a series of reasons why each factor was selected. Table B2.2 in Appendix B provides a summary definition and description of each of those factors.

3.3 DATA COLLECTION AND ANALYSIS

3.3.1 Purpose

Once the site selection team had formulated a preliminary list of factors for site area identification, an extensive process of data collection, analysis and mapping was undertaken by the other site selection consultants under the direction of Dillon's site selection staff. A second round of data collection and analysis took place with the introduction of the additional set of factors used to address the maintenance of choice principle.

The purpose of the data collection and analysis work was to provide the information base necessary for site area identification. The information obtained also provided a subject, agency and geographic data base for use in subsequent site selection stages. In addition, the review of data identified a number of general and specific issues and concerns which were then incorporated into the site selection work, as well as into other OWMC activities and programs.

3.3.2 The Data Collection and Analysis Process

The data collection and analysis process included:

- a detailed review of available information and statistics
- contacts with Federal, Provincial and Municipal officials
- preliminary field checks, and
- air photo interpretation.

The information obtained included reports, records, policy documents, mapping and a variety of other relevant source materials.

The Phase 3B site selection technical reports also list Ministry and agency contacts. In the case of municipal contacts the meetings were preceded by letters explaining contacting procedures and information requirements. In some instances more than one contact was necessary. Such contacts sometimes included initial briefing meetings, interviews with staff specialist, and follow-up meetings to fill information gaps. Some private corporations and recognized experts were also consulted to obtain relevant data and to discuss how that data should be analyzed and interpreted.

3.3.3 Confirmation and Mapping of Data

During the data collection and analysis process, cross-checking under the direction of Dillon served to confirm, refine and update information, to resolve inconsistencies and to fill identified gaps.

The major product of the data collection and analysis process was a series of seventeen, 1:50,000 scale factor maps on sixty-eight sheets prepared by the other site selection consultants.[1] (See Table 3.3.)

Although data contained on these maps were considered potentially relevant, no conclusion had been reached at this point by the site selection team concerning which factors would be employed for site identification purposes.

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[1] The candidate areas were plotted onto four 1:50,000 base maps covering the north, west, central and eastern portions of the candidate regions. Thus, as an example, there were four maps for the physical resource factors.

TABLE 3.3

List of Factor Maps

Agriculture

1. Soil Capability for Agriculture
2. Agricultural Cropping Intensity
3. Agricultural Constraints
4. Urban Shadow Areas

Land Use and Land Ownership

1. Commercial
2. Industrial
3. Residential
4. Provincial Planning Areas, Rural Designations and Publicly Owned Lands

Physical and Biological Environment

1. Physical Resource Features
2. Biological Resources [1]

Socio-Economic

1. Population Density [1]
2. Community Features
3. Recreation and Tourist Features [1]

Transportation

1. Railway Lines [1]
2. Transmission Lines[1]
3. Airports
4. 1988 Arterial Road Network [1]

[1] Although this information was collected and mapped during the site area identification stage it was not employed as a constraint until subsequent site selection stages.

3.4 RANKING OF FACTORS

3.4.1 Ranking of Factors - Individual Consultants

It was recognized by the site selection team that the factors used for site area identification purposes were not all equal in importance. The site selection team, therefore, determined that the factors should be ranked to the extent possible.

The bases for the ranking system developed were the site selection goals and principles described in Sections 2.2 and 2.3. With respect to goals, the factors were ranked by the other site selection consultants (under the direction of Dillon) in terms of the relative severity of risk to human health and potential environmental impact. The factors were not ranked on the basis of the goal of minimizing costs to OWMC. The site selection team decided against employing costs for site area identification purposes for the following reasons:

- cost was already ranked as the least important goal; thus it was unlikely that areas would be excluded on the basis of costs;
- the cost data were of a very preliminary nature and were incomplete. It was decided that a thorough analysis of cost constraints to facility development should only be used if cost data were reasonably accurate and could be placed within the context of other capital and operating costs.

The role of the site selection principles in factor ranking is highlighted in Table B1.5 in Appendix B.

The factors were ranked by the other consultants from positive and low constraints to high constraints. Factors were placed at the same level when they were considered to be approximately equal in the degree of constraint which they posed for siting or where differences among factors were considered to be too subtle, on the basis of the information available, to permit sharp distinctions between or among factors.

In developing their rankings, the site selection consultants were requested by the site selection coordinating consultant (Dillon) to attempt (where possible) to distinguish among factors which:

- represented positive siting considerations;
- constituted relatively minor siting constraints and/or represented potentially suitable siting considerations and/or the lack of suitability could be readily confirmed and/or there was insufficient information to warrant the exclusion of areas;
- represented adverse impacts but for which it might be desirable to retain possible site areas either because of a variability in suitability within the factor or factors, or because of a desire to maintain a range of siting opportunities;
- constituted relatively severe potential risks and impacts.

If the other consultants determined that they could draw further distinctions in terms of level of suitability beyond the four categories cited above i.e. they could identify five or more levels of constraint, they were requested to do so. Where the other consultants did not consider it appropriate to place factors within all four levels of constraints cited above ie. they could identify only two or three levels of constraint, they were requested to group their factors in terms of one, two, or three of the four levels of constraint. In addition the consultants were requested to incorporate agency and public concerns in the development of their factor rankings.

The initial factor rankings prepared by the consultants were reviewed and discussed by the site selection team to ensure consistency in approach, consistency (where possible) with expressed agency and public priorities, and an adequate rationale for the rankings. Table B3.1 in Appendix B indicates the rankings of the factors as prepared by the consultants together with the summary reasons for those rankings. The other site selection consultants' Phase 3B reports describe in greater detail their respective roles in factor ranking.

3.4.2 Overall Ranking of Factors

To this point no consideration had been given to how the separate consultants' rankings would be combined into an overall ranking of factors. There had also been no decisions made regarding which factors should or should not be treated as exclusionary, i.e. the basis for excluding areas from further consideration. The need for an overall ranking was based on the recognition by the site selection team that, for example, the lowest constraint biological factors would not necessarily be equivalent to the lowest constraint agricultural factors. It was also understood that an intrinsic part of the site selection process would be the early and ongoing consideration of tradeoffs among factors.

The basis for the development of an overall ranking of factors by the site selection team were the distinctions which were given by the individual consultants.

The first step in the overall factor ranking process was the identification of factors which were considered to represent positive siting considerations in the following senses:

- provision of a second level of protection;
- land use and land ownership compatibility;

- preferences expressed in public workshops.

The factors which satisfied these criteria are listed in Table B3.2 in Appendix B together with the major reasons for their ranking. This first set of factors was defined as Level 1 constraints.

The second step in the overall ranking process was the identification of factors which were considered to represent potentially suitable siting considerations. Factors were considered to be potentially suitable if they met one or more of the following criteria:

- potentially mitigatible effects;
- insufficient data for the exclusion of areas;
- easy to confirm suitability or lack of suitability (in subsequent site selection stages);
- considerable variability in suitability among features represented by factors.

The factors which satisfied these criteria are listed in Table B3.3 in Appendix B together with the major reasons for their ranking. This second set of factors was defined as Level 2 constraints.

To this point the process had focused on the factors which appeared to represent potentially suitable conditions. There remained several factors with characteristics ranging from moderate to severe constraints. As a means of drawing distinctions among this remaining group of factors it was decided to begin by identifying factors which clearly represented severe constraints. In this way an attempt could then be made to draw more subtle distinctions among the remaining factors.

The third step in the overall factor ranking process was therefore, the identification of factors which represented severe potential constraints to siting. Factors which were placed in this category met the following criteria:

- major potential risks or impacts, and;
- minimal variability in suitability among features represented by factors.

The factors which satisfied these criteria are listed on Table B3.5 in Appendix B together with the major reasons for their ranking. This set of factors was defined as Level 4 constraints. These factors were defined as Level 4 constraints because it was recognized that there remained a range of factors which were more constrained than the Levels 1 and 2 factors but less constrained than the Level 4 factors.

The factors which remained at this point fell somewhere between potentially suitable (Level 2) and severe constraints (level 4), and exhibited the following characteristics:

- potential adverse impacts; and/or
- considerable variability in suitability among features represented by a factor (significant environmental units) or factors (agricultural capability and use).

It was concluded by the site selection team that the remaining factors should initially be placed at the same level - Level 3 constraints. The Level 3 factors are listed in Table B3.4 in Appendix B together with the major reasons for their ranking. Although these factors were placed at the same factor level (Level 3), because of the variation in suitability within and among the factors, it was recognized that it would be necessary to consider the potential for drawing further distinctions within Level 3 during the factor application step.

3.5 APPLICATION OF FACTORS

3.5.1 Factor Application Process

After ranking, the next step in the site area identification process was the determination of which factors should be treated as exclusionary or non-exclusionary, i.e. which areas should be eliminated from further consideration and which areas should be carried forward to the next stage of candidate site identification.

The considerations which affected the site selection team's application of factors were largely the same as those employed in the ranking of factors. They included:

- potential suitability, severity of potential risk or impact, and ease of mitigation;
- adequacy of information for decision-making and relative ease of confirmation;
- variability of suitability within or among factors;
- preferences expressed in public workshops.

An additional consideration was the principle of maintenance of choice for critical tradeoffs and factors not directly considered in site area identification.

The factor application process undertaken by the site selection team focused on the factors within the four levels of suitability identified in the overall ranking of factors. The process proceeded in the following steps.

a) Step 1 - The factor application process began by limiting the search process to those areas which (as expressed by the factors) represented positive siting considerations (Level 1 factors). No site areas emerged from this process.

b) Step 2 - It was decided by the site selection team that the Level 2 factors should then be treated as non-exclusionary. It was concluded by the site selection team that the fourteen site areas which emerged at this point failed to provide an adequate range of siting opportunities;

c) Step 3 - As a result it was concluded that the Level 3 and Level 4 factors would have to be addressed. As both levels represented potentially major impacts it was decided by the site selection team that the next step should be to identify those factors (the Level 4 factors) which should clearly be treated as exclusionary;

d) Step 4 - The treatment of the Level 4 factors as exclusionary, removed only a small proportion of the site areas. Thus, it was concluded by the site selection team that the areas represented by the remaining (Level 3) factors would have to be addressed in terms of:

- whether they should all be treated as exclusionary?

- whether they should all be treated as non-exclusionary?

- whether some of the Level 3 factors should be treated as exclusionary and others as non-exclusionary and if so what would be the basis for these distinctions?

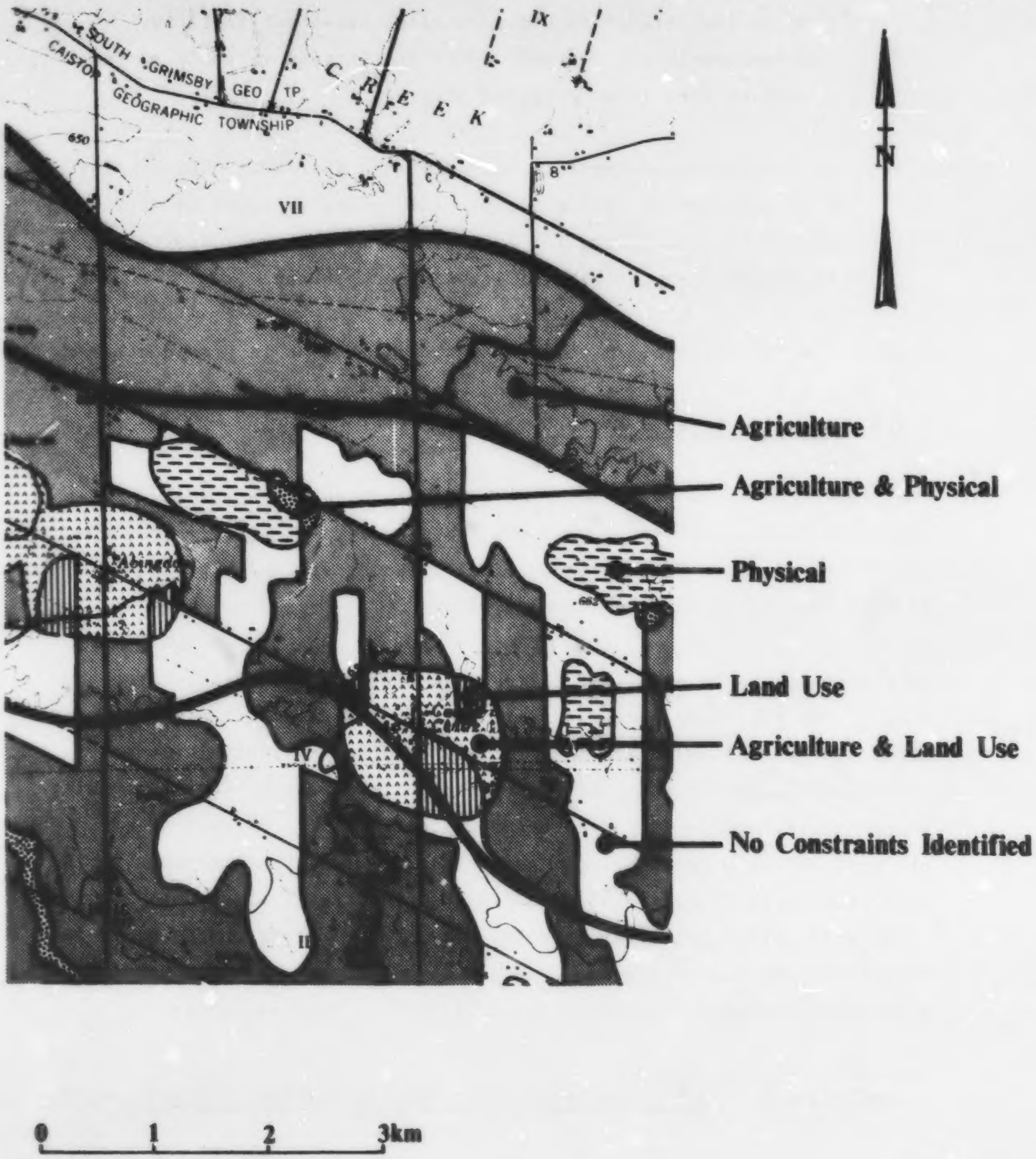
After reviewing these various options the site selection team concluded that the biological factor significant environmental units (SEU) should be treated as non-exclusionary and that the Level 3 agricultural factors should be subdivided with certain factors being treated as exclusionary and others as non-exclusionary.

e) Step 5 - Before any firm conclusions were reached regarding the final treatment of the site area identification factors the site selection team incorporated the principle of maintenance of choice into the factor application process. This resulted in some modifications to the treatment and application of the site area identification factors.

As described above the factor application process was iterative in nature. Tentative conclusions were reached by the site selection team regarding the treatment of factors excluding the consideraticn of the maintenance of choice principle. Preliminary composite constraint maps were then prepared by Dillon's site selection staff. The results were reviewed by the site selection team in terms of whether there appeared to be an adequate diversity of siting choices for major tradeoffs and factors not considered in site area identification. If the site selection team concluded that the subsequent stages of site selection would be seriously restricted (from a maintenance of choice perspective) the treatment of factors was modified to broaden the range of siting opportunities.

The factor application process took place in two parallel streams - one for landfill/fully integrated sites and one for physical/chemical treatment plant/incinerator sites. Figure 3.2 provides an example of a small portion of a composite constraint map. The major distinguishing features which necessitated separate constraint mapping processes were:

- as a general guide the standard landfill or a fully-integrated facility was assigned a greater consistent silt-clay soil depth guideline (greater than 10 metres with areas with 20 metres or


SOUTH GRIMSBY GEO TP
CAISTOR GEOGRAPHIC TOWNSHIP
CREEK
IX
VII
650
8
Abingdon
IV
II
665
N
Agriculture
Agriculture & Physical
Physical
Land Use
Agriculture & Land Use
No Constraints Identified
0
1
2
3km

COMPOSITE CONSTRAINT MAP - EXAMPLE
SITE AREA IDENTIFICATION

Figure 3.2

more being considered first over areas with lesser thicknesses) than an incinerator-physical/chemical treatment facility (approximately 10+ metres). This distinction was made at the candidate area identification stage.[1]

- an integrated or landfill only site has a greater maximum site size requirement (112 hectares - 277 acres as compared with 80 hectares - 198 acres) for an incinerator-physical/chemical treatment plant. (M.M. Dillon Limited, 1984a)

A more detailed description of each of the five steps is provided below.

3.5.2 Step 1 - Level 1 Factors

The first step taken by the site selection team in the application of the site area identification factors was the consideration of limiting the search process to the least constrained areas as expressed by the Level 1 factors (See Table B3.2 in Appendix B).

This approach would have limited the search process to areas characterized by the following factors: till and lacustrine clay plains or drumlins (Halton) which are industrially designated, publicly owned or have rural designations. The restriction of the search process in this manner would have facilitated the provision of a second level of protection from a hydrogeologic perspective. Facility components would have been established in industrial areas or in rural areas not considered prime agricultural areas. Private property impacts would have been minimized. This approach would also have been generally consistent with the preferences expressed at the site selection workshops.

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[1] OWMC - 1983b - Facilities Development Process - Phase 3 Interim Report.

The application of the Level 1 factors resulted in no site areas being identified for either landfill/integrated or incinerator/physical chemical treatment plant facilities. In all cases areas which were suitable on the basis of one or more Level 1 factors were unsuitable on the basis of other Levels 2, 3 or 4 factors.

3.5.3 Step 2 - Level 2 Factors

The second step in the application of the site area identification factors was the decision not to exclude the Level 2 factors. (See Table B3.3 in Appendix B). The addition of Level 2 factors to the process was considered warranted by the site selection team partly from a maintenance of choice perspective, but also because the Level 2 factors included potentially suitable characteristics which warranted further consideration.

The major reasons for the site selection team considering it appropriate to treat the Level 2 factors as non-exclusionary were:

- constraints were potentially mitigatible;
- the affected areas were potentially suitable, either because they possessed positive characteristics or there was insufficient information available to conclude that they were unsuitable;
- in all cases there was a considerable variability in potential suitability within the factors;
- it would not be difficult to confirm the suitability of the features and facilities encompassed by the factors.

From a maintenance of choice perspective the site selection team felt it important that a range of siting choices be retained for the following site selection objectives not considered in the constraint mapping work to this point:

- air dispersion and ambient air quality;
- sensitive uses along access routes, e.g. residences, community and recreation features;
- community lifestyle and character;
- biological constraints;
- transportation and utilities, e.g. railways, major roads;
- impacts on sensitive uses in the vicinity of potential sites as a result of noise, visual intrusion etc.;
- economic character and potential public and private financial impacts;
- on and off-site development and operating costs.

A clear preference was not established regarding many site selection tradeoffs as a result of technical analysis or on the basis of comments received from participants at an OWMC site selection workshop held in January 1984. The site selection team, therefore concluded that it was desirable to retain a range of siting choices for such siting tradeoffs as the following:

- areas of environmental significance vs. productive or potentially productive agricultural areas;
- urban fringe vs. remote rural locations;

- higher agricultural capability lands but in areas subject to urban influence vs. lower capability agricultural lands in stable agricultural communities;

- areas with deep consistent silt-clay soils but in stable productive agricultural areas vs. areas with shallower, less predictable silt clay soils which are either less productive agriculturally or which have a more limited expectation of long term agricultural use;

- areas with relatively good transportation access in relatively productive agricultural areas vs. areas which are relatively removed from the major sources of waste but within areas not in agricultural use and/or with limited capability for agriculture.

As indicated on Map 1 (Volume 4 - Map Portfolio) treating the Level 2 factors as non exclusionary resulted in four site areas meeting or exceeding the minimum site size requirement for fully integrated or landfill facilities and ten site areas meeting or exceeding the minimum site size requirement for a combined physical chemical treatment plant and incinerator facility. All but one of these site areas is located in the Welland - Niagara Falls areas. The remaining PI[1] site area is located in the centre of the Niagara Peninsula in the Township of Wainfleet.

The site selection team considered it generally undesirable to limit the search process to four site areas suitable for fully integrated or landfill facilities and ten site areas suitable for combined physical/chemical treatment plant and incinerator facilities. It was recognized that there remained many considerations which could lead to the exclusion of site areas which could, in turn, inhibit the detailed consideration of siting and facility arrangement tradeoffs. These considerations included:

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[1] PI refers to site areas potentially suitable for an incinerator or a physical/chemical treatment plant or an incinerator and physical/chemical treatment plant together.

- a more detailed investigation and refinement of factors already considered, e.g. hydrogeology through detailed well analysis could have resulted in the conclusion that one or more site area(s) were unacceptable or relatively less suitable;

- the introduction of additional site selection factors might have resulted in the conclusion that one or more site area(s) were unsuitable or relatively less desirable. These new constraints could have arisen as a result of on and off-site field investigations, the detailed analysis of secondary sources and interviews and meetings with local officials and members of the public;

- with a relatively small number of sites, it would be very difficult to explore the difficult tradeoffs cited above. The rejection of even a small number of site areas could mean, for example, that all the remaining site areas could have relatively poor regional access;

- the retention of only four LF[1] site areas could have meant that, with further analysis, the (fully-integrated) facility arrangement option (one of the two facility arrangement options preferred by OWMC) could be lost. The loss of even one or two LF sites could also have meant a substantial distance between the PI and LF sites.

In viewing the characteristics of the Level 2 site areas a number of potential site-specific concerns were also identified which contributed to the site selection team's conclusion that it would be premature to limit the search process to the Level 2 site areas. These concerns were identified by reviewing the characteristics of the site areas identified in general terms in Phase 3A (as presented in the OWMC Phase 3 Interim Report Map Portfolio) as well as during the Phase 3B site area identification analysis. These potential areas of concern included the following:

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[1] LF refers to site areas potentially suitable for a landfill or for a fully integrated facility comprised of a landfill, a physical/chemical treatment plant and an incinerator.

- All of the site areas have relatively poor regional access. Rather than restricting the search process to site areas which possessed relatively poor regional access and suitable soil conditions it was concluded by the site selection team that it would be preferable to explore further the possibility of modifying the site area identification process with the intention of identifying site areas which possessed both characteristics;

- All four landfill/integrated site areas are located in relatively close proximity to urban built-up areas. With respect to the issue of human exposure and potential conflict with existing and future land uses, it was considered desirable by the site selection team to retain sites in both urban fringe and remote rural locations. The need to explore this tradeoff in greater detail was also reflected in the responses received at the OWMC January 1984 public workshop;

- Only six of the PI site areas are located in areas not within LF site areas. It was recognized by the site selection team that constraints which might necessitate the rejection of a LF site area, could also necessitate the rejection of the PI portion of the site area;

- From even a preliminary inspection it was evident that a number of the site areas, including two of the LF site areas, are dissected by major roads, utilities and railways. Of the two LF site areas which are not severed by major roads and utilities one is of marginal configuration and the other is on the fringe of a hydrogeologically suitable area. Thus there appeared to be a strong possibility that several of the site areas (potentially all the LF site areas) would not be suitable for facility development.

In view of the limitations cited above, the site selection team decided not to limit the search process to the Level 2 factors. It was recognized by the site selection team that by making fewer factors exclusionary it would be possible both to retain the siting opportunities associated with the Level 2 factors and to address a broader range of potential siting constraints and opportunities.

3.5.4 Step 3 - Level 4 Factors

At this point it was recognized by the site selection team that both Level 3 and 4 factors possessed characteristics which represented potential adverse impacts. The major difference between the two levels was that the Level 4 factors represented major potential risks and impacts and limited variability within or among the factors whereas there was a considerable variability in the degree of constraint possessed by the Level 3 factors.

After considering the characteristics of the Level 3 factors the site selection team decided that the preferred approach would be first to address the question of which factors should be treated as exclusionary - beginning with the Level 4 factors. If the treatment of the Level 4 factors as exclusionary resulted in a fairly substantial reduction in the size and number of site areas requiring further investigation (while at the same time maintaining a range of siting opportunities) then the site selection team concluded that the difficult question of distinguishing degrees of suitability within and among the Level 3 factors could be deferred until subsequent site selection stages.

After reviewing the characteristics of the Level 4 factors (See Table B3.5 in Appendix B), the site selection team concluded that the factors within Level 4 should be treated as exclusionary. The major reasons for this conclusion included the following:

- failure to provide a second level of protection (from the perspective of both pathways into the environment and human exposure);
- low likelihood of suitability, based on available data;
- major potential impacts (agriculture, social, land use);
- major public concern as identified through OWMC's public consultation program.

The treatment of only the Level 4 factors as exclusionary did not, however, appreciably reduce the areas under consideration. Treating the Level 4 factors as exclusionary would only have diminished the candidate areas by about 15%. This reduction in the size of the candidate areas still resulted in the retention of large areas, many characterized by constraints which were (based on available data) considered by the site selection team as adequate to warrant further reductions in the size of candidate areas. The site selection team, therefore, concluded that further consideration should be given to the potential for treating Level 3 factors as exclusionary.

3.5.5 Step 4 - Level 3 Factors

In reviewing the factors listed in Level 3, the site selection team recognized that one possibility would have been to treat all the Level 3 factors as exclusionary. However, as described in subsection 3.5.2, the diversity of siting choices remaining with this approach was considered too restricted. A second possibility would have been to treat all the factors in factor Level 3 factors as non-exclusionary. This approach, as described in subsection 3.5.3, would have resulted in only a minor reduction in the size and number of candidate areas and would have retained many areas which were unsuitable. It was, therefore, tentatively concluded that some division within the Level 3 factors would be necessary.

The possibilities considered were to treat either significant environmental units or the agricultural factors as exclusionary. The difficulty with this approach was felt by the site selection team to be that a clear preference between these two sets of factors was not evident through internal discussions or through the input received from agency discussions and the public consultation program. It was also evident that there was a considerable variability in suitability within the significant environmental unit factor and among the agricultural factors. The site selection team therefore, decided to review these two factors to determine if level of suitability distinctions could be made within each factor or among the factors.

a) Significant Environmental Units (SEUs)

After reviewing the characteristics of the significant environmental units (SEUs) scattered across the candidate areas the site selection team concluded that it was not desirable to make distinctions within the SEUs factor. SEU is a term formulated by Gartner Lee Associates Ltd. to refer to several types of areas with special environmental functions and attributes (Gartner Lee Associates Ltd., 1984a). These areas were identified by a number of agencies including the Ministry of Natural Resources, Conservation Authorities and Regional Municipalities. It was known by the site selection team that SEUs encompass a great many environmental attributes. It was also known that the process by which they were identified and delineated varied somewhat from agency to agency and that there were differences in the level of detail with which the field investigations supporting the designations were undertaken.

As previously indicated (Section 3.1) it was not considered appropriate at the site area identification stage to undertake the extensive field investigations and agency discussions necessary to subdivide SEUs into a series of classes, based on degrees of suitability and significance. In view of the wide variety of environmental attributes encompassed by SEUs there was also some doubt expressed by Gartner Lee Associates Ltd. as to whether (even given the time and resources) it would have been possible to develop and apply such a system.

The site selection team, therefore, concluded that the SEU factor should not be subdivided. This conclusion meant that all SEUs would have to be treated equally as either exclusionary or non-exclusionary. In view of the variety of attributes encompassed by the SEU factor (some of which might have represented less of a constraint to facility development than others) the site selection team concluded that SEUs should be treated as a non-exclusionary factor. In that way it was reasoned, the particular attributes of each SEU could be evaluated through the subsequent analysis of individual site areas. This approach was felt to be desirable as it minimized the potential for suitable site areas being prematurely rejected.

Although it was concluded that SEUs should be treated as a non-exclusionary factor, the site selection team also recognized that in most instances, SEUs are environmentally sensitive or significant and that development within SEUs would involve a strong likelihood of creating a significant adverse environmental impact. Thus, it was understood that although the treatment of SEUs as a non-exclusionary factor at this stage might add some small, potentially suitable areas, the increase in the diversity of choice with respect to either trade-offs or factors not considered would, at best, be marginal.

b) Agricultural Factors

The remaining factors within Level 3 all pertained to agriculture. As described in detail in the report Site Selection Process. Phase 3B:

Selection of Candidate Sites - Agriculture prepared by Ecologistics Ltd. and Deloitte, Haskins and Sells Associates, a factor ranking system had been developed which combined soil capability for agriculture and agricultural cropping systems.[1] (Ecologistics Ltd., Deloitte Haskins and Sells Associates, 1984a)

The constraint ranking system, developed by Ecologistics Ltd. and Deloitte Haskins and Sells Associate (1984a) for the agricultural factors (ranked from low to high constraints) was as follows:

- publicly owned land with any use[2]
- industrially designated with any use[2]
- urban shadow with any use
- class 5, 6 or 7 agricultural land with any use

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[1] The land use consultants also employed an agricultural land use designation factor. Agricultural lands included both agricultural and rural lands, as designated in municipal official plans. The site selection team concluded that all agricultural designations should be treated as non-exclusionary at this stage. This conclusion reflected the variability in agricultural designations and the general nature of the data upon which such designations are based. It was recognized that the data base for such designations was generally the Canada Land Inventory agricultural classification system as well as agricultural land use data. As the most up-to-date CLI mapping as well as agricultural use data was already incorporated into the agricultural factors, the site selection team concluded that agricultural capability and use were already adequately addressed by other factors.

In addition, it was understood that further analyses of agricultural land uses would be undertaken on a site area by site area basis. The site selection team, therefore, concluded that the best approach to maximizing the potential for identifying suitable sites and still allowing for continued consideration of the protection of agricultural resources was to treat agricultural land use designations as a non-exclusionary factor.

[2] Although these are land use/land ownership rather than agricultural factors, the agricultural consultants considered it important to stress that, from an agricultural perspective, they were preferred.

- class 3 or 4 with non-agricultural land use
- class 1 or 2 with non-agricultural land use
- class 3 or 4 with hay (poor quality), pasture or grazing
- class 4 with mixed, cereal grain, hay-grain or hay (good quality)
- class 4 with row crops or corn-wheat
- class 1 or 2 with hay (poor quality), pasture or grazing
- class 3 with mixed, cereal grain, hay-grain or hay (good quality)
- class 3 with row crops or corn-wheat
- class 1 or 2 with mixed, cereal grain, hay-grain or hay (good quality)
- class 1 or 2 with row crops or corn-wheat
- existing specialty crops

The agricultural factors were ranked by Ecologistics Ltd. on the basis of both the quality of the farmland and the intensity of use. In accordance with the input received at the site selection workshops (see Table C4.2) the capability factor generally received more weight than the cropping system factor. (Ecologistics Ltd. and Deloitte Haskins and Sells Associates, 1984a)

For purposes of interpreting relative impact levels, five categories of impact were assigned to the indicators by Ecologistics Ltd.: high, medium to high, medium, medium to low, and low. Consideration was also given to the level of confidence with which the rankings could be applied. Level of confidence was a function of the precision and accuracy in describing, in particular, levels of investment in existing farm operations. The rationale for the impact rankings and the reasons for the confidence levels are described in detail in the report Site Selection Process. Phase 3B: Selection of Candidate Sites - Agriculture prepared by Ecologistics Limited and Deloitte, Haskins and Sells Associates (1984a).

The agricultural factor, existing specialty crops, (which was ranked as "high impact"), had been placed in Level 4 and was therefore treated as an exclusionary factor (Section 3.5.5). The factors which were ranked as "low impact" were placed in Level 2 and were treated as non-exclusionary (Section 3.5.3). The balance of the agricultural factors were ranked as moderate to high, moderate, and moderate to low and were placed in Level 3.

The treatment of the agricultural factors by the site selection team was based on a recognition of the pivotal role of agricultural considerations in maintaining a balance between an adequate range of site areas (from a maintenance of choice perspective) and the need to reduce the number and size of site areas to manageable proportions. The pivotal role of the agricultural factor in this process was partly a result of the nature of the other non-agricultural factors. It was also, however, a consequence of the fact that agriculture is the predominant land use in the candidate areas. The Level 3 agricultural factors comprise approximately 85% of the candidate areas.

It was concluded by the site selection team that the dividing line between exclusionary and non-exclusionary agricultural factors would have to be different for landfill/integrated site area identification purposes than for incinerator-physical/treatment plant site area identification purposes. This difference was largely based on the more limited range of landfill/integrated sites available (because of their greater site size and silt-clay soil depth guidelines). It was also recognized that the incinerator and physical/chemical treatment plants, as industrial type uses, could be considered less compatible with agriculture than a standard landfill. The greater range of physical/chemical treatment plant/incinerator siting options made it possible to treat more agricultural factors as exclusionary.

After reviewing the rankings of the various agricultural factors, the site selection team, with the advice of Ecologistics Ltd., concluded that the three agricultural factors which were rated as "moderate to high" impact should be treated as exclusionary for all facility components. A distinction was drawn between classes 3 and 4 with row crops or corn-wheat. Class 3 with row crops or corn-wheat were treated as exclusionary. Class 4 with row crops or corn-wheat were treated as non-exclusionary. The three agricultural factors which were treated as exclusionary for landfill and fully integrated facility arrangements were, therefore:

- class 1 or 2 with row crops or corn-wheat;
- class 1 and 2 with mixed, cereal grain, hay-grain or hay (good quality);
- class 3 with row crops or corn-wheat.

The additional agricultural factors, which were treated as exclusionary for incinerator-physical/chemical treatment plant site area identification purposes included:

- class 3 with mixed, cereal grain, hay-grain or hay (good quality)
- class 1 or 2 with hay (poor quality), pasture or grazing
- class 4 with row crops or corn-wheat

- class 4 with mixed, cereal grain, hay-grain or hay (good quality).

The reasons for these decisions are described in the Ecologistics Ltd. and Deloitte Haskins and Sells Associates, report Site Selection Process. Phase 3B: Selection of Candidate Sites - Agriculture (1984a). Basically, the decisions represented an attempt to balance the maintenance of a diversity of siting choices with the importance of minimizing potential impacts on agricultural resources.

The decision not to treat all the Level 3 agricultural factors as exclusionary did not mean that the preservation of agricultural resources was not a major concern. Rather it meant that, where potential agricultural impacts were ranked as moderate and moderate to low, such areas would be subject to more detailed scrutiny in subsequent stages.

Agricultural impacts continued to represent a major concern in subsequent site selection stages as reflected in the agricultural factors which were employed in the screening and initial comparative evaluation stages.

3.5.6 Step 5 - Site Identification Factors and the Maintenance of Choice

a) Overview of Siting Opportunities

As described in subsection 3.5.4 (Step 4) preliminary conclusions had been reached by the site selection team regarding the treatment of the Level 3 factor as either exclusionary or non-exclusionary. These conclusions were preliminary as they failed to fully address the principle of the maintenance of choice for siting opportunities.

Before conclusions were reached regarding the application of factors, the site selection team felt it important to maximize the diversity of choice for key tradeoffs and site selection objectives not considered in the site area identification process. Consideration was also given to the concerns raised through the OWMC public consultation program. (See Appendix B-Table B4.1).[1]

After reviewing the distribution of site areas which emerged as a result of the application of the preliminary list of exclusionary factors, it was apparent that a diversity of siting choices remained for many of the tradeoffs, the site selection objectives not yet addressed, and priorities identified through the public consultation program. However, there were some instances where the diversity of siting choices was more restricted than was considered desirable. These limitations included the following:

- there was a limited range of siting opportunities with respect to public lands;

- there was a limited range of siting opportunities with respect to industrial lands;

- there were very few siting opportunities in those portions of the candidate areas which were relatively closer to the sources of special wastes and to the provincial freeway system;

- the limitations in terms of relative accessibility within the candidate areas made it difficult to address tradeoffs among transportation, agricultural and hydrogeologic factors;

- the restriction of agricultural considerations to capability/ productivity factors meant there was a relatively small number of siting choices in areas subject to urban influence as compared with site areas in stable agricultural areas. This limitation made it difficult to address the tradeoff between urban fringe as against rural locations as well as the tradeoff between urban shadow areas (with relatively higher agricultural capability/productivity) as compared with rural areas outside of urban shadows (with relatively lower agricultural capability/productivity).

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[1] The role of the Fall 1983 and January, 1984 workshops in the site area identification process is described in Appendix C. The role of public input in the treatment of factors is also addressed in the other site selection technical reports.

In view of these restrictions to the siting process the site selection team decided that the siting process should be broadened to address a diversity of other siting considerations. The preferred way to achieve this objective was felt by the site selection team to be the introduction of a series of new factors which would selectively broaden the application of existing factors.

The only existing factors which could be treated in this manner were the Level 3 agricultural factors for the following reasons:

- the Level 4 physical resource factors, which were treated as exclusionary (surface granular soil, stream course, flood plain, wetland, drumlin (Niagara), drumlin field, moraine) could not be subdivided and were all necessary to maintain a second level of environmental protection;

- the Level 4 land use factors which were treated as exclusionary (residential built-upon, residential designated and serviced, commercial designated and built-upon, residential existing, rural and agricultural, residential designated and vacant and commerical designated and vacant) could not be subdivided and would all have resulted in major social and economic impacts; they also represented a very small proportion of the candidate areas and their inclusion would not have appreciably increased the diversity of siting options;

- the Level 4 community and recreation features factors, as well as major airports, which were treated as exclusionary, were all major facilities or have populations which are difficult to evacuate, e.g. nursing homes. The treatment of such features as non-exclusionary would have resulted in major social and economic impacts. They also represented a very small proportion of the candidate areas and their inclusion would not have appreciably increased the diversity of siting opportunities;

- Indian Reserves could only be considered non-exclusionary if the affected bands had indicated a desire to have the facilities established on their Reserves because the Province does not possess the legal authority to expropriate an Indian Reserve; the concerned bands had already indicated that they did not desire to have the facility components established on their Reserves[1];

- agriculture is the predominant land use in the candidate areas; the site selection team recognized that agriculture would have to be considered if the issue of tradeoffs with transportation and hydrogeologic factors were to be addressed. Agriculture would also have to be considered in order to address the urban fringe-rural and urban shadow-rural tradeoffs.

In light of the considerations cited above, the site selection team therefore decided that the agricultural exclusionary factors (with the exception of specialty crops) should be treated as non-exclusionary in the following cases:

- on publicly owned lands;

- on industrially designated lands;

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[1] The decision not to establish the facility components on an Indian Reserve was a policy decision reached by OWMC. As a result, the Indian Reserve factor is not addressed in any of the other site selection technical reports.

- on lands designated for other unspecified urban uses;

- in "urban shadow" areas;

- in those remaining portions of the candidate areas which were considered to be most accessible for transportation.

Each of these modifications to the treatment of the Level 3 agricultural factors is described in the subsections which follow.

This approach did not reduce the importance which was and will be attached to agricultural concerns. Rather it made it possible to consider these concerns within the context of a number of other important siting issues and tradeoffs. Without this modification to the applications of factors, these issues and tradeoffs would not have been addressed fully.

(b) The Treatment of Publicly Owned, Industrial and Urban Lands

Publicly owned lands, industrially designated (vacant, serviced, built-upon) and lands within urban or hamlet development envelopes (as defined in Regional Official Plans)[1] factors were all treated as non-exclusionary (see Table B6.2).

However, portions of such lands would be treated as exclusionary if they were also within Level 3 agricultural exclusionary factors.

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[1] No new lands were identified within this category which were not subject to exclusionary constraints on the basis of other factors.

In the case of lands within urban or hamlet development envelopes and industrially designated lands factors, it was concluded by the site selection team that there was a clear public policy commitment for the development of such lands for non-agricultural uses. In view of the likely land values and development activities associated with such designations it was concluded by the site selection team that in most instances agriculture could be viewed only as an interim use. Therefore it was considered advisable to retain such lands for future consideration rather than to exclude them on the basis of agricultural capability/productivity. In the event that some of those lands did have long term potential for agricultural use it was recognized that this concern could be addressed in subsequent stages in the site selection process.

In the case of publicly owned lands the site selection team recognized that such lands have the potential for non-agricultural use because in many cases the lands were acquired for non-agricultural purposes. Therefore it was recognized that the use of publicly owned lands would tend to minimize the private property impacts associated with facilities' development. It was, therefore, decided to retain publicly owned lands for future consideration rather than to exclude them on the basis of agricultural capability/productivity. In the event that some of these lands were determined to have long term significance for agricultural use, it was concluded by the site selection team that this consideration could be introduced into subsequent stages in the site selection process.

With these adjustments in the application of the site area identification factors, the site selection team concluded that the potential for identifying sites which are industrially designated, designated for other urban but unspecified uses on publicly held or with provincial planning areas lands would be maximized.

c) The Treatment of Urban Shadow Lands

Urban shadow areas are described by the agricultural consultant, Ecologistics Ltd. as:

> areas where the pressures of urbanization have altered the agricultural land base, infrastructures and/or agricultural community sufficiently to place the long-term future of the agricultural community in doubt. (Ecologistics Ltd. and Deloitte Haskins and Sells Associates, 1984a)

As described in detail in the report Site Selection Process. Phase 3B: Selection of Candidate Sites - Agriculture prepared by Ecologistics Limited and Deloitte, Haskins and Sells Associates (1984a):

> Parts of the rural landscape in southern Ontario have in the past and/or are at present undergoing a transition. In certain areas where agriculture once dominated land use and land ownership patterns, commercial agriculture is taking a secondary position as non-agricultural interests begin to dominate. Purchase of land by non-farmers, escalation of land prices, an influx of rural non-farm residences, hobby and horse farms, idle land and conflicts with non-farm land uses characterize many such areas.
>
> These and other changes, commonly referred to in the literature as "urbanization" cast a shadow of doubt over the remaining farm operations...From an agricultural perspective such areas should not be excluded from consideration as candidate sites. Such views have been

> **expressed by representatives of provincial agricultural organizations and in the public workshops.** (Ecologistics Ltd. and Deloitte Haskins and Sells Associates, 1984a)

As previously indicated the mapping of soil capability and cropping intensity failed to show such urban shadow areas. The site selection team, therefore, decided to introduce a separate set of urban shadow factors. A background report prepared by Ecologistics Ltd. and Deloitte Haskins and Sells Associates to the Site Selection Process - Phase 3B: Selection of Candidate Sites - Agriculture (1984c) details the process by which a series of urban shadow indicators were derived and applied to delineate twelve urban shadow areas.

On the basis of the analysis undertaken it was concluded that the twelve areas represented:

> **those areas within which urban pressures have altered land uses and land tenure enough to place the long term viability of agriculture in doubt.** (Ecologistics Ltd. and Deloitte Haskins and Sells Associates, 1984c)

The urban shadow factor was treated as a non-exclusionary factor irrespective of soil capability class and present agricultural use. Specialty agriculture, however, continued to be treated as an exclusionary factor.

This modification in the application of the site area identification factors did not mean that urban shadow areas would be favoured in comparisons with non-urban shadow areas irrespective of agricultural capability and use. Rather it meant that the site selection process was being broadened sufficiently to permit the more detailed examination of the tradeoffs among such sites,

> **at later stages of study when site specific data can be obtained for variables such as land fragmentation, land ownership, duration of land leases, etc.** (Ecologistics Ltd. and Deloitte Haskins and Sells Associates, 1984c)

c) The Treatment of the Most Accessible Portions of the Candidate Areas

Although the previous two modifications to the application of the Level 3 agricultural factors had broadened the range of siting choices, the site selection team recognized that there remained a limited number of siting opportunities within the most accessible portions of the candidate areas. There was also some doubt as to whether the range of siting opportunities which remained could permit a thorough exploration of the tradeoffs among transportation, agriculture and hydrogeologic factors in subsequent site selection stages.

The approach adopted by the site selection team to these concerns was to modify the exclusionary designation for agricultural areas (with the exception of specialty crops) for areas which were determined to be either highly accessible or highly accessible with especially deep and consistent silt-clay soils. It was not considered necessary to modify the agricultural factors in areas with deep consistent silt-clay soils and relatively poor transportation access as there appeared to be an adequate range of siting options within such areas.

A ranking of locations across the candidate areas was undertaken by the transportation consultants (M.M. Dillon Limited) to determine which locations or areas had relatively better transportation access. The ranking system was based on a combination of two indices - tonne kilometres of waste haulage and transportation accident probability index. These two indices are defined and their significance described in Table B5.1 in Appendix B.

Tables B5.2, B5.3 and B5.4 in Appendix B respectively, prepared by Dillon's transportation staff list transportation cost indices, accident probability indices, and composite haulage and accident probability indices for seventeen locations, scattered across the candidate areas. As described in the report Site Selection Process - Phase 3: Selection of Candidate Sites - Transportation prepared by M.M. Dilion Limited and as illustrated in Figure 3.3 the point rating system was used to develop a series of contour lines extending across the candidate areas.

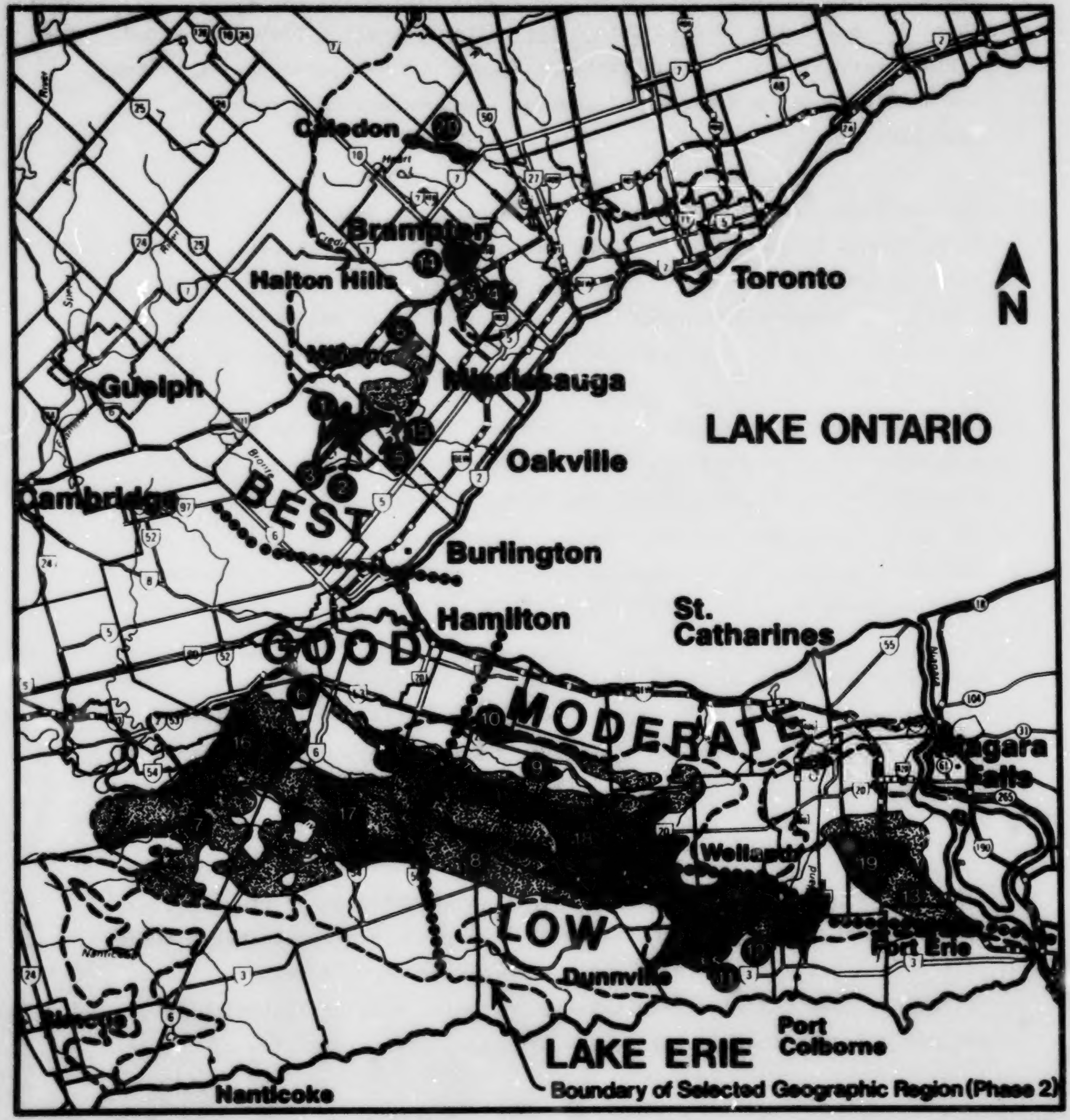
The candidate areas to the north of Lake Ontario (Candidate areas 1, 2, 3, 4, 5, 14, 15 and 20) were ranked as having the best access. To the south of Lake Ontario the candidate areas in the west and north western portions of Niagara Peninsula (Candidate areas 6, 16 and portions of 7, 8, 9, 10, 17 and 18) were considered to have good to moderate access.

In order to maximize the opportunities for establishing the facility components in these portions of the candidate areas which had the best access it was, therefore, concluded by the site selection team to treat the agricultural factor (with the exception of specialty crops) as non-exclusionary for the candidate areas rated as having the best access (candidate areas 1, 2, 3, 4, 5, 15 and 20).

This conclusion did not mean that good transportation access would always take precedence over agriculture in subsequent site selection stages. Rather it meant that the candidate area identification process was being broadened to ensure that it was possible to explore this issue in greater detail in Phase 4A.

Although this modification to the site area identification process permitted the further consideration of transportation-agricultural trade-offs it did not address the issue of whether areas were being excluded which were constrained agriculturally but which were considered highly desirable from a transportation and hydrogeologic perspective.

Figure 3.3 Candidate Area Accessibility SITE AREA IDENTIFICATION


Caledon
Brampton
Halton Hills
Toronto
N
Guelph
Mississauga
LAKE ONTARIO
Oakville
Cambridge
BEST
Burlington
Hamilton
St. Catharines
GOOD
MODERATE
Niagara Falls
Welland
LOW
Port Erie
Dunnville
Simcoe
Port Colborne
LAKE ERIE
Nanticoke
Boundary of Selected Geographic Region (Phase 2)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Source: Ontario Waste Management Corporation, March 1984

Miles 0 10 Kilometers 0 10

Legend – Components Included

- ■ Physical/Chemical Treatment Plant Only
- ■ Engineered Landfill & Physical/Chemical Treatment Plant
- ▨ Physical/Chemical Treatment Plant & Incinerator
- ■ Integrated – All Components
- ●●●● Boundary Separating Areas of Different Relative Transportation Access
- ● Candidate Area Numbers

Map 3 in the OWMC - Phase 3 Interim Report - Map Portfolio (OWMC, 1983c) identifies various classes of silt-clay soils in the Golden Horseshoe. The candidate areas were drawn from the Category 1 and Category 2 areas delineated on Map 3. The most desirable soils, in terms of depth and consistency, are the 1A soils, which have 30 m or more of generally uniform silt-clay soils.

Candidate areas 3 and 5 are the only instances of 1A soils in the most accessible portions of the candidate areas. To the south of Lake Ontario the large area of 1A soils in the east central portion of the Niagara Peninsula is largely located in the area considered to have average to below average access. There is, however, a finger of 1B soils (20-30 m of generally uniform silt-clay soils) stretching from approximately the Binbrook area in the west to the Bismarck-Wellandport area in the east.

The site selection team concluded that consideration should be given to dropping the exclusionary agricultural factors (with the exception of specialty crops) in this area as it appeared to have somewhat better access and proximity to waste sources than the 1A portion of the Niagara Peninsula. Before such a decision was felt to be warranted, however, it was decided that it would first be necessary to demonstrate that the 1B soils area (the western portion of candidate area 18) had significant transportation advantages over the 1A soils area (the balance of candidate area 18). This conclusion was based on the reasoning that only with substantial transportation advantages would the disadvantages, i.e. potentially greater agricultural impacts and shallower silt-clay soils, warrant adjustments in the treatment of agricultural factors.

In order to compare the relative transportation advantages and disadvantages of the two areas it was considered necessary to identify and compare various access road options into the area. An initial transportation overview of the relative acceptability of various road links from the Queen Elizabeth Way, across the Niagara Escarpment and into the areas under consideration was undertaken by Dillon's site selection and transportation staff. Information was provided by each of the other site selection consultants to Dillon's site selection staff for this analysis.

The general conditions and probable acceptability of ten major north-south routes in the area for the movement of transport vehicles hauling OWMC special wastes (as determined by the transportation consultant - M.M. Dillon Limited) are summarized in Table B5.5 in Appendix B.

After considering road geometry, road conditions and whether the road had a desirable provincial or regional arterial road designation, the following north-south roads were determined by the Dillon transportation staff to be potentially acceptable (see Map 2, Volume 4 - Map Portfolio):

- Highway 20, Hamilton (includes two routes)
- Niagara Regional Road 12, Grimsby
- Niagara Regional Road 14/714, Grimsby
- Niagara Regional Road 18, Lincoln
- Niagara Regional Road 24, Lincoln

These six routes were considered by the site selection team to be representative of access into various portions of candidate area 18. The comparative analysis of these routes is summarized in Table B5.6 in Appendix B. A description of the factors employed in the comparative evaluation and their significance is outlined in Table B2.3 in Appendix B.

After reviewing the characteristics of the six access routes the site selection team concluded that the western and central routes did not offer sufficient transportation access advantages to warrant modifications to the Level 3 exclusionary agricultural factors. The major reasons for this conclusion were as follows:

Western Routes (Highway 20)

- o It was determined that the two most western routes (both using Highway 20) involved haulage past a substantially greater number of homes and a significantly greater distance through built-up urban areas and areas designated for residential uses than would be the case for the easterly routes;

  The relative advantages associated with the western routes (routes 1 and 2) were felt, at best, to balance their substantial disadvantages. As previously indicated, it was concluded that before the treatment of the agricultural factors would be altered, the western area would have to have substantial advantages from a transportation perspective.

Central Routes (Regional Roads 12 and 14)

- o The two central routes (routes 3 and 4) access the candidate areas through the population centres of Grimsby and Smithville. It was also noted that they passed more community and recreation features, included a greater distance through built-up areas, had a higher accident frequency and included a greater distance through residential land use designations and passed a greater number of residences than did the eastern routes (routes 5 and 6).

  Routes 3 and 4 were considered comparable to route 5 for most of the other factors. It was recognized that routes 3 and 4 passed a similar number of active farm complexes, included a longer distance through lands with sensitive hydrogeologic conditions and were rated lower in terms of proximity to freeways.

After considering these differences, it was concluded that routes 3 and 4 were no better, and in some respects less desirable than route 5 in terms of transportation access.

- In comparing the central routes against route 6, routes 3 and 4 involved a greater distance through residential designations and built-up areas and passed a larger number of residences and community and recreational features and route 6 involved a greater distance from the freeways, a greater number of active farm complexes and a longer distance through hydrogeologically sensitive lands.

After reviewing these tradeoffs it was concluded by the site selection team that the analysis undertaken to this point did not demonstrate a clear enough preference among the routes sufficient to warrant compromising the agricultural criteria.

Finally, it was recognized by the site selection team that the eastern and central routes are relatively close together (in terms of travel time along the QEW). Thus it was concluded that the differences among the routes would tend to pertain more to the features along the access routes from the QEW rather than to overall proximity to sources of waste generation. As a result it was felt to be difficult to draw an east-west dividing line on the basis of relative differences in accessibility to candidate area 18.

The site selection team therefore concluded that modifications to the Level 3 exclusionary agricultural criteria should be limited to the most accessible portions of the candidate areas to the north of Lake Ontario. The site selection team also concluded that the relative merits of alternative access routes into the candidate areas should be explored in greater detail once potential sites had been identified.

3.5.7 Conclusions and Results

The final treatment of the site area identification factors is summarized in Table 3.4. As indicated in Table 3.4 factors were not treated the same way for fully integrated/landfill site areas as compared with the physical/chemical treatment plant/incinerator site areas. Table 3.4 also highlights the modifications which were made to the Level 3 agricultural exclusionary factors.

After reviewing the final treatment of the site area identification factors the site selection team concluded that the site area identification process:

- reflected the pertinent site selection goals and objectives;
- incorporated major relevant facilities characteristics assumptions;
- represented an appropriate level of detail for one stage in a staged site selection process;
- encompassed a broad range of risk-related and environmental considerations;
- reflected the priority attached to protecting human health and the environment and the need to provide a second level of environmental protection;
- incorporated many of the issues and concerns raised by agencies and the public;
- recognized the limits of the data base;
- recognized the limits of available time and resources;

- o maintained an adequate diversity of choice with respect to critical tradeoffs and factors not directly considered in site area identification.

The major product which resulted from the site area identification process was two sets of composite constraint maps (eight maps in all - See Volume 4 - Map Portfolio). These composite maps were prepared by Dillon's site selection staff. One set of these maps (Maps 3-6) portray the factors used to identify potential landfill and fully integrated facility site areas. The second set portray the factors used to identify potential incinerator, physical/chemical treatment plant and combined incinerator physical/chemical treatment plant (partially integrated facility) site areas (Maps 7-10).

The site area identification process resulted in the identification of a large number of areas which were considered suitable for more detailed analysis. Many of these residual areas were much smaller than the minimum size requirements or possessed such narrow and irregular configurations that site development would have been precluded, and therefore were eliminated.

Each of these areas was reviewed by Dillon's site selection staff using facility layout templates prepared by Dillon's engineering staff. Site areas were only eliminated if they were considered clearly unsuitable. If there was any doubt as to whether it might be possible to use the site area for one or more facility components the area was retained for further consideration. A total of 152 site areas (65 landfill/integrated site areas and 87 physical/chemical treatment and/or incinerator site areas) were identified as a result of this process (See Maps 11 and 12 of Volume 4). As the siting requirements for separate incinerator and separate physical/chemical treatment plant sites were essentially the same at this stage as those for combined physical/chemical treatment plant/incinerator site areas, facility arrangement options remained open for further consideration during subsequent stages in the site selection process.

TABLE 3.4

Site Area Identification Factors

Factors marked X identify areas unsuitable for given facility components. Factors marked 0 were judged not to rule out the given components at this stage.

	All Facility Components
Physical Resources	
• drumlin field	X
• surface granular soil	X
• stream course	X
• flood plain	X
• wetland	X
• drumlin (Niagara)	X
• moraine	X
• drumlin (Halton)	0
• till and lacustrine clay plain	0
• poor surface drainage	0
Biological Resources	
• significant environmental units (SEUs)[1]	0
• non-SEU woodlots greater than 20 ha in area	0
Land Use	
• residential, designated and built-upon	X
• residential, designated, serviced and vacant	X
• residential, designated and vacant	X
• residential, existing rural and agricultural	X
• commercial, designated and built-upon	X
• commercial, designated and vacant	X
• rural, designated	0
• industrial, designated and vacant	0
• industrial, designated, serviced and vacant	0
• industrial, designated and built-upon	0
• residual, regional official plan[2]	0
• provincial planning area	0
• publicly owned lands	0

[1] Areas identified by provincial and/or municipal agencies as environmentally sensitive or significant

[2] Not ranked as no areas identified which were not excluded on the basis of other factors.

TABLE 3.4 (Cont'd)

Site Area Identification Factors

Factors marked X identify areas unsuitable for given facility components. Factors marked 0 were judged not to rule out the given components at this stage.

	All Facility Components
Recreation and Community Features	
• hospital	X
• nursing home	X
• home for the aged	X
• institution for the disabled	X
• regional shopping centre	X
• public building (emergency function)	X
• special education facility	X
• post secondary education facility	X
• theme park	X
• all other public buildings (non-emergency function)	0
• school	0
• conservation area	0
• regional park	0
• municipal park	0
• private park	0
• golf course	0
• commercial recreation facility	0
• community centre	0
• cultural centre	0
• museum	0
• fairground/exhibition	0
• campground	0
• public sports facility	0
• private sports facility	0
Transportation	
• major airport (Transport Canada licensed)	X
Indian Reserves	X

TABLE 3.4 (Cont'd)

Site Area Identification Factors

Factors marked X identify areas unsuitable for given facility components. Factors marked 0 were judged not to rule out the given components at this stage.

	Fully integrated or landfill	Physical/chemical treatment plant and incinerator
Agriculture		
• existing specialty crops	X	X
• class 1 or 2 with row crops or corn-wheat[1]	X	X
• class 1 or 2 with mixed, cereal grain, hay-grain or hay (good quality)[1]	X	X
• class 3 with row crops or corn-wheat[1]	X	X
• class 3 with mixed, cereal grain, hay-grain or hay (good quality)[1]	0	X
• class 1 or 2 hay (poor quality), pasture or grazing	0	X
• class 4 with row crops, corn-wheat[1]	0	X
• class 4 with mixed, cereal grain, hay-grain or hay (good quality)[1]	0	X
• class 3 or 4 with hay (poor quality), pasture or grazing	0	0
• class 1 or 2 with non-agricultural land use	0	0
• class 3 or 4 with non-agricultural land use	0	0
• class 5, 6 or 7 with any use	0	0

[1] Except for areas within industrially designated, residual, regional official plan, publicly owned lands, urban shadow and short haulage distance, where this factor is non-exclusionary.

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TR-7/AP/A
12/13/84

VOLUME 1

GENERAL CHARACTERISTICS AND THE IDENTIFICATION OF SITE AREAS

APPENDIX A

TABLE A1.1

Site Selection Objectives

I GOAL

To select a site(s) which minimizes risk to human health.

Objectives

A. Site - "pathways" into the environment

1. To site facility components in hydrogeologic settings that will naturally restrict the movement of contaminants and protect groundwater resources and to utilize engineering measures where required to ensure maximum environmental safety.

2. To site facility components in hydrogeologic settings that will naturally restrict the movement of contaminants and protect human health, surface water resources and aquatic ecosystems.

3. To site facility components in airsheds that have atmospheric dispersion characteristics which will protect air quality and aquatic and terrestrial ecosystems.

4. To site facility components in settings which minimize the hazards to the site as a result of such conditions as flooding, potential susceptibility to seismic disturbance, slope failures and to utilize engineering measures where required to ensure maximum environmental safety.

TABLE A1.1

Site Selection Objectives (Cont'd)

5. To site facility components in settings which facilitate environmental monitoring as well as the application of countermeasures, including backup emergency services.

6. To site facility components to minimize potential contamination of food chains.

7. To site facility components to minimize hazards to the site from other uses which might contribute to the likelihood or severity of a release of contaminants.

8. To locate discharge locations (if required) with dispersion characteristics that will protect human health, surface water resources and aquatic ecosystems.

B. Site - human exposure

1. To site facility components to minimize the number of people who might be exposed as well as the duration of their exposure to contaminants in the event of a release.

2. To site facility components to minimize the potential for the contamination of existing wells and other sources of water for human or animal consumption.

3. To site facility components to minimize the potential for exposure of populations who are sensitive to exposure and/or are difficult to evacuate.

TABLE A1.1

Site Selection Objectives (Cont'd)

C. Transportation and Discharge - pathways into the environment

1. To select transportation routes and modes which minimize the likelihood of a release of contaminants during transit.

2. To site facility components such that the physical settings along the access routes to the site(s) naturally restrict the movement of contaminants and protect human health, terrestrial and aquatic ecosystems.

D. Transportation and Discharge - human exposure

1. To site facility components to minimize the number of people who might be exposed and the duration of that exposure to contaminants along access routes to the site(s) in the event of a release.

2. To site facility components to minimize the potential for exposure of populations who are sensitive to exposure and/or are difficult to evacuate along access routes to the site(s).

TABLE A1.1

Site Selection Objectives (Cont'd)

II GOAL

To select a site(s) which minimizes environmental impact.

Objectives

A. Physical and Biological

1. To avoid destruction and minimize disruption of significant natural ecosystems.

2. To avoid destruction and minimize disruption of significant vegetation or wildlife populations.

3. To avoid destruction and minimize disruption of rare or uncommon species of plant and animal life.

4. To avoid destruction and minimize disruption to significant landforms and other physical features.

5. To minimize physical impacts on surface water such as sedimentation and changes in base flow.

6. To minimize impacts on surface water quality from emissions.

B. Resources

1. To minimize the amount of land required to safely construct and operate the facility component(s).

TABLE A1.1

Site Selection Objectives (Cont'd)

2. To minimize displacement of prime agricultural soils.

3. To minimize displacement and disruption of existing farm enterprises.

4. To minimize disruption to productive agricultural areas and to stable agricultural communities.

5. To minimize displacement and disruption to other natural resource uses such as mineral aggregates.

6. To minimize disruption of economically and/or recreationally important biological resources.

7. To minimize displacement of and disruption to heritage and archaeological resources.

8. To minimize displacement of areas with a high potential for resource development.

C. Land Uses and Land Ownership

1. To minimize conflict with existing, committed, proposed and planned land uses.

2. To maximize the potential for the establishment of the facility components in locations characterized by similar industrial uses.

3. To minimize the amount of private property required and the disruption to land ownership patterns.

4. To minimize conflict with federal, provincial, municipal and native communities, policies, programs and plans.

TABLE A1.1

Site Selection Objectives (Cont'd)

D. Social

1. To minimize the displacement of people, particularly those groups and individuals vulnerable to change.

2. To minimize conflict between the facility components, operations and the use and enjoyment of properties in the vicinity of the site(s), as a result of visual intrusion, noise, etc.

3. To minimize losses or impacts on buildings and features of archaeological, historical, symbolic, cultural or social significance.

4. To maximize compatibility between the facility components and the character, image, traditions and lifestyle of the affected area.

5. To establish the facility components, to the extent possible, in areas in which the local communities can adapt to the type of changes which might result from the project.

6. To maximize community acceptance of the facility components.

7. To maximize compatibility with the visual character and appearance of the landscape in the vicinity of the facility components.

8. To minimize conflict between the transportation of hazardous wastes to the facility components and the use and enjoyment of properties along access routes to the site(s).

TABLE A1.1

Site Selection Objectives (Cont'd)

9. To minimize conflict between facility-related traffic and local traffic by ensuring that access routes provide an acceptable level of service.

E. Economics

1. To maximize local employment opportunities.

2. To minimize the displacement of businesses.

3. To minimize property value depreciation.

4. To minimize disruption to the operations of local businesses.

5. To maximize compatibility with the local and regional economic character of the affected area.

6. To minimize adverse effects upon the provision and use of public and private community services and facilities.

7. To minimize the burden on municipal services and finance.

TABLE A1.1

Site Selection Objectives (Cont'd)

III GOAL

To minimize financial costs to OWMC.

Objectives

A. To hold financial costs to the lowest level consistent with the other goals of the site selection process.

1. To minimize approvals costs.

2. To minimize site acquisition costs.

3. To minimize on-site development costs, e.g. clearing, drainage, grading, screening and other engineering modifications.

4. To minimize off-site development costs, e.g. service extensions, road improvements.

5. To minimize development and/or operations costs associated with the construction and operations of the facility component(s), e.g. duplicate facilities.

6. To minimize development and/or operations costs necessitated by site or area characteristics, e.g. special remedial or monitoring measures to protect human health and the environment.

7. To minimize on and off-site development and/or operations costs associated with effluent dispersion, if any, e.g. pipelines.

8. To minimize transportation operations costs associated with hauling hazardous wastes to and among facility components.

TABLE A1.2

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
A) Waste Quantities, Waste Distribution and Facility Capacity		
° initial capacity 150,000 tonnes/annum; ultimate capacity 300,000 tonnes/annum; no expansion beyond 300,000 tonnes/annum assumed	° affects site size requirements; affects estimates of wastes to be transported ° ultimate capacity used for site size requirements - in that way all retained sites of sufficient size for ultimate capacity	° OWMC. 1984c. Facilities Development Process - Phase 3 Report.
° "distribution of wastes to each municipal source was based on the report by Pilorusso Research Associates Inc."	° employed in transportation cost analysis	° Shaw T., F. Pilorusso and G. Beech, Transportation of Special Wastes in Ontario (prepared for OWMC by Pilorusso Research Assoc. Inc. September 1983) ° M.M. Dillon Limited. 1984c. Site Selection Process. Phase 3B: Selection of Candidate Sites - Transportation

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
° "source of cement additives assumed to be the Ingersoll area"	° employed in transportation cost analysis	° M.M. Dillon Limited. 1984c. Site Selection Process. Phase 3B: Selection of Candidate Sites - Transportation.
° "cement only process for total solidification of the process effluent would require 7,700 tonnes/annum of cement	° employed in transportation cost analysis	° M.M. Dillon Limited. 1984c. Site Selection Process. Phase 3B: Selection of Candidate Sites - Transportation.
		° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.
"based on the assumed 150,000 tonnes/annum of special wastes processed and 7,700 tonnes/annum of additives...124,200 tonnes/annum of treated residue...transferred to the landfill disposal site	° role in transportation impact assessment	° M.M. Dillon Limited. 1984c. Site Selection Process. Phase 3B: Selection of Candidate Sites - Transportation.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
B) Technical and Disposal Destruction		
1) Thermal Destruction		
• thermal destruction of organic wastes	• affects hydrogeologic suitability • affects potential emissions and effluents • affects land use compatibility • affects buffer and study area analysis	• OWMC. 1984c. Facilities Development Process - Phase 3 Report.
• a single site incinerator	• affects number of sites under consideration • affects site size requirements • affects transportation analysis	• OWMC. 1983a. Facilities Development Process - Phase 2 Report.
• stack height between 40 metres (130 feet) and 100 metres (300 feet)	• affects potential for conflict with airports • implications - visual impacts, social and land use compatibility	• Ontario Waste Management Corporation

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions

Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
	° influences air dispersion analysis ° both minimum and maximum height considered in considering site suitability	
° adherence at least to Provincial standards regarding emissions	° consideration in formulation of technical buffers ° consideration in air dispersion assessment	° Ontario Waste Management Corporation
° general operating characteristics and appearance comparable to a heavy industrial use e.g. potential for noise odours, fugitive emissions	° affects potential agricultural, land use and socio-economic impacts	° Ontario Waste Management Corporation and M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.
ii) Physical/Chemical Treatment		
° physical/chemical treatment of inorganic wastes	° affects hydrogeologic suitability ° affects technical buffer analysis ° affects potential emissions and effluents	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
° single physical/chemical treatment plant	° affects land use compatibility ° affects number of sites under consideration ° affects site size requirements ° affects transportation analysis	° OWMC. 1983a. Facilities Development Process - Phase 2 Report.
° maximum building height - 30 metres	° affects potential for conflict with airports ° implications - visual impacts, social and land use compatibility	° Ontario Waste Management Corporation and M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones. December 1984.
° adherence at least to Provincial standards regarding emissions and effluents	° consideration in formulation of technical buffer ° consideration in formulation of technical buffer	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions

Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
	• consideration in air dispersion work	• Ontario Waste Management Corporation
• total solidification of residue from physical/chemical treatment of inorganics and thermal destruction of organic wastes (alternatives still under consideration)	• affects site size requirements and transportation impacts	• Ontario Waste Management Corporation
• general operating characteristics and appearance comparable to medium industrial use e.g. potential for noise, odours, fugitive emissions	• affects potential agricultural, land use and socio-economic impacts	• Ontario Waste Management Corporation and M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.
iii) Standard Landfill		
• standard landfill (alternatives still under consideration)	• affects site size requirements • affects height of landfill • affects soil depth requirements	• OWMC. 1984c. Facilities Development Process - Phase 3 Report.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
° only treated solidified residue placed in landfill (alternatives still under consideration)	° affects hydrogeologic analysis and conclusions	° OWMC. 1984c. Facilities Development Process - Phase 3 Report.
° 124,200 tonnes/annum of residue to landfill; 7,700 tonnes/annum of additives	° employed in transportation cost analysis ° affects site size requirements ° affects number of trucks	° Ontario Waste Management Corporation and M.M. Dillon Limited. 1984c. Site Selection Process. Phase 3B: Selection of Candidate Sites - Transportation.
° maximum height landfill type development - 20 metres	° implications for visual impacts, social and land use compatibility	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.
° general operating characteristics and appearance comparable to solid waste landfill	° used in study area definition ° many potential effects associated with solid waste landfill e.g. potential for methane gas, birds, flying papers not present with landfill for special waste residues	° Ontario Waste Management Corporation and M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
C) Facility Operations		
i) Truck Traffic		
• major transportation mode - truck	• used in transportation cost analysis • used in comparative analysis of alternative access routes and alternative siting options	• Shaw, J., Pilorusso, F. and G. Beech, Transportation of Special Wastes in Ontario, prepared for OWMC by Pilorusso Research Associates Inc., September 1983
• truck volumes more than 60 trucks per day at an initial capacity of 150,000 tonnes	• used in comparative analysis of alternative access routes and alternative siting options	• OWMC. 1984c. Facilities Development Process - Phase 3 Report.
ii) Opening Date		
• opening date assumed to be 1988	• used to identify arterial roads	• Ontario Waste Management Corporation
D) Facility Arrangements		
• preference - fully integrated; or incinerator and physical/chemical facility at one site and landfill at separate site	• implications for site size requirements • implications for transportation analysis • implications for hydrogeologic suitability for number of sites under consideration	• OWMC. 1984c. Facilities Development Process - Phase 3 Report.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions
Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
	° implications for capital and operating cost assumptions ° implications for potential land use and social impacts	
E) Site Sizes[1]		
° operating area - physical/ chemical treatment plant incinerator on same site - 11 hectares[2] (27 acres)	° implications for use and resources which might be displaced on sites	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.
° operating area - separate landfill 110 hectares[2] (272 acres)	° implications for uses and resources which might be displaced on sites	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.

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[1] A much more detailed treatment of site size, technical buffer and study area issues is provided in a separate report - M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones, prepared on behalf of the Ontario Waste Management Corporation.

[2] The operations area might be sufficient as a maximum site size in a heavy industrial setting. Potential industrial uses would need to be examined on a site-by-site basis to determine appropriate site sizes.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
° probable source of emissions – located in an area 150 m by 50 m in the centre of the operations area	° implications for technical buffer requirements ° area based on an analysis of a series of accident cases with extremely abnormal operating conditions	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites – Facilities Characteristics and Technical Buffer Zones.
° site size for integrated site (all 3 components together) 112 hectares (277 acres)	° implications for uses displaced, land acquisition costs and for land use, agricultural, social, environmental and economic impacts ° site size includes a technical buffer of 400 m for the physical/chemical treatment plant and incinerator around the probable source of emissions area ° the technical buffer at 400 m is intended to minimize the potential for unacceptable air quality levels during extremely infrequent accidental emissions and to minimize nuisance effects upon sensitive uses in the vicinity of the site	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites – Facilities Characteristics and Technical Buffer Zones.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
	° site size also includes a 50 m technical buffer for the standard landfill	
	° the technical buffer of 50 m is intended to permit monitoring and space for remedial action in the event of horizontal migration of leachate despite all precautions	
	° the landfill is considered a suitable use to be located within the technical buffer for the incinerator physical/chemical treatment facility	
° site size for partially integrated site - incinerator and physical/chemical plants (separate landfill) - 80 hectares (198 acres); assumes acquisition of total area; assumes non-heavy industrial setting	° implications for uses displaced, land acquisition costs and land use, agricultural, social, environmental and economic impacts	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
	° the technical buffer of 400 m is based on meeting Provincial air emission standards for extremely infrequent accidental emissions; intended to minimize nuisance effects upon sensitive uses in the vicinity of the site ° implications for use displaced, land acquisition costs and for land use, agricultural, social, environmental and economic impacts	
° site size for partially integrated site - physical/chemical treatment plant and landfill (separate incinerator) - 112 hectares (277 acres); assumes acquisition of total area	° site size includes a technical buffer 400 m for the physical/chemical treatment plant ° the technical buffer of 400 m is based upon meeting Provincial air emission standards for extremely infrequent accidental emissions and is intended to minimize nuisance effects upon sensitive uses in the vicinity of the site	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
	° site size also includes a 50 m technical buffer for the engineered landfill ° the technical buffer of 50 m is intended to permit space for remedial action in the event of horizontal migration and leachate despite all precautions ° the landfill is considered a suitable use to be located with the 400 m technical buffer for the incinerator-physical/chemical treatment plant	
° site size for separate incinerator - 64 hectares (158 acres); assumes acquisition of total area	° implications for uses displaced, land acquisition costs and for land use, agricultural, social, environmental and economic impacts ° site size includes a technical buffer of 400 m	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions

Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
	° the technical buffer of 400 m is intended to minimize the potential for unacceptable air quality levels during extremely infrequent accidental emissions and to minimize nuisance effects upon sensitive uses in the vicinity of the site	
° site size for separate landfill 110 hectares (272 acres); assumes acquisition of total area	° implications for uses displaced, land acquisition costs and for land use, agricultural, social, environmental and economic impacts	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones.
	° site size includes a 50 m technical buffer for the engineering landfill	
	° the technical buffer of 50 m is intended to permit space for remedial action in the event of horizontal migration of leachate despite all precautions	

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
F) Study Areas		
1) 500 m study area around standard landfill	° includes area most likely to be directly affected in terms of noise, visual intrusion and land use conflict ° same as Provincial guidelines for sanitary landfills ° off-site impacts likely to encompass a much more limited area	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones. (Based on Ministry of the Environment Guidelines for Sanitary Landfills)
° 1,000 m study area around probable source of emission area (150 m by 50 m rectangle in the centre of the operations area)	° includes technical buffer as well as additional area which might potentially be affected in terms of noise, visual intrusion and land use conflict ° equivalent to maximum Provincial guideline regarding separation distances between heavy industrial uses and sensitive uses; off-site impacts likely to encompass a much more limited area	° M.M. Dillon Limited 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones. (Based on discussions with Ministry of the Environment Officials)

TABLE A1.2 Cont'd

Major Facilities Characteristics Assumptions Employed in Phase 3B Site Selection

Assumptions	Role in Site Selection and Comments	Source
° 5 km study area around incinerator stack	° includes maximum point of impingement concentrations around a tall stack ° population distribution agricultural, land use, ambient air quality considered ° anticipated long term effects not expected to be significant but study area employed based on the principle of a second level i.e. where a choice exists it is preferable to locate the facility such that the number and proximity of people in the area surrounding the site is relatively low	° M.M. Dillon Limited. 1984a. Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones. (Based on technical input from the Ontario Research Foundation)
G) Employment		
° moderate employment levels would not result in a major influx of employees to areas with attendant impacts; not expected to draw extensively from the local workforce	° potential impacts on population levels and characteristics, economic base of community, social and economic character of area, and municipal services and finance	° Ontario Waste Management Corporation

TR-7/A-1-3.1
13/12/84

TABLE A-1.3

Relationship of Facilities Characteristics Assumptions to Phase 3B Site Selection Analysis

EXAMPLES OF FACILITIES CHARACTERISTICS INTERDEPENDENT WITH SITE SELECTION	RELATED COMPONENTS OF SITE SELECTION	COMMENTS
° waste characteristics	° site size and buffer requirements	° could influence accident scenarios which were used to determine site size ° conservative assumptions employed in generation and application of scenarios would mean that changes in assumed waste characteristics not likely to alter site size and buffer requirements
	° potential emissions and effluents	° OWMC has indicated that all Provincial standards to be satisfied ° risk minimization approach employed in Phase 3B site selection should mean that changes in waste characteristics should not alter relative or absolute suitability of areas or sites
° waste quantities	° site size and operating life	° a substantial increase in assumed waste quantities would reduce the operating life of the landfill component but would not be expected to alter the relative or absolute suitability of areas or sites ° a substantially smaller amount of special wastes would increase the operating life of the landfill and could result in a greater separation distance from surrounding uses ° the approach of using as small a site size as possible and retaining site areas of marginal size and configuration as long as possible would make it unlikely that site areas (which were otherwise highly suitable) would have been rejected on the basis of site size and would have to be reconsidered with a reduction in estimated waste quantities

TABLE A-1.3 (Cont'd)

Relationship of Facilities Characteristics Assumptions to Phase 3B Site Selection Analysis

EXAMPLES OF FACILITIES CHARACTERISTICS INTERDEPENDENT WITH SITE SELECTION	RELATED COMPONENTS OF SITE SELECTION	COMMENTS
• degree of solidification	• risks, impacts and costs along effluent corridor and at discharge point of pipeline	• the Phase 3B site selection analysis has proceeded on the basis of total solidification • partial solidification would involve the consideration of risks, impacts and costs associated with an effluent pipeline and outfall
	• site size	• partial solidification would lead to a reduction in the site size requirements for the landfill component • such a reduction in site size would increase the operating life of the facility and provide a greater buffer from surrounding uses; the conservative approach employed in Phase 3B should make it unlikely that major changes would occur in conclusions regarding relative and absolute suitability
	• transportation risks, impacts and costs	• partial solidification could lead to a reduction in the number of trucks to the facility; truck volume changes are not expected to alter the site area identification or potential site identification stages; it also appears that the reasons for the rejection of sites during candidate site identification would not be altered by a reduction in truck volumes

TABLE A-1.3 (Cont'd)

Relationship of Facilities Characteristics Assumptions to Phase 3B Site Selection Analysis

EXAMPLES OF FACILITIES CHARACTERISTICS INTERDEPENDENT WITH SITE SELECTION	RELATED COMPONENTS OF SITE SELECTION	COMMENTS
• incinerator and physical-chemical treatment technologies	• site size and buffer requirements	• the site selection work undertaken to date would only be affected by changes in technologies where major alterations would be necessary to the accident scenarios which resulted in the site size and buffer requirements • the conservative approach which was employed in the generation and application of scenarios would make it unlikely that major changes (upward or downward) would occur in site size requirements
	• stack height	• a substantial change in the height of the stack or the adoption of a technology which did not involve a stack would necessitate the reconsideration of a number of integrated and partially integrated siting options
	• emissions and/or effluents	• a change in incinerator or physical treatment technology which produced the same quality of emissions and/or effluents would not be expected to influence the site selection process
	• off-site impacts and costs	• if the change in technologies did not influence the industrial character of the facility components, the Phase 3B site selection analyses would not be expected to be affected

TABLE A-1.3 (Cont'd)

Relationship of Facilities Characteristics Assumptions to Phase 3B Site Selection Analysis

EXAMPLES OF FACILITIES CHARACTERISTICS INTERDEPENDENT WITH SITE SELECTION	RELATED COMPONENTS OF SITE SELECTION	COMMENTS
	• access road risks, impacts and costs	• access road risks, impacts and costs would only be affected by a change in technology if there were major differences in terms of waste characteristics, waste quantities, emissions and effluents • the risk minimization approach employed in Phase 3B would not be expected to be sensitive to minor changes in waste characteristics, quantities, emissions and effluents • changes in waste distributions are not likely to alter the conclusions reached during site area and potential site identification • a major change in waste distribution could alter the relative ranking of sites during candidate site identification; it could also influence some of the conclusions regarding the maintenance of siting opportunities in reviewing the reasons for site rejection; it would appear that changes in waste distribution would have to be very substantial to warrant the alteration of site rankings
• alternatives to landfill and landfill type and design options	• depth and consistency of soil	• changes in the type of disposal method are not generally expected to alter siting preferences providing the priority (from a hydrogeologic perspective) for deep and consistent silt-clay soils is maintained • some alternative technologies, e.g. salt mines, would

TABLE A-1.3 (Cont'd)

Relationship of Facilities Characteristics Assumptions to Phase 3B Site Selection Analysis

EXAMPLES OF FACILITIES CHARACTERISTICS INTERDEPENDENT WITH SITE SELECTION	RELATED COMPONENTS OF SITE SELECTION	COMMENTS
		necessitate the reconsideration of past site selection conclusions ° changes in the amount of excavation required, e.g. above-ground landfill or storage, might involve the consideration of areas considered unsuitable for landfills based on less soil depth requirements. It is also possible that the preference for deep consistent silt-clay soils might mean the maintenance of the same depth requirements. ° the selection of an entombment concept could lead to the reconsideration of rejected landfills to maintain siting opportunities in lands with especially deep consistent silt-clay soils ° changes in landfill type and design options which did not greatly alter soil type and depth requirements would not be expected to affect the Phase 3B site selection analysis
° alternative transportation modes, e.g. rail	° transportation risks, impacts, costs	° a decision to use rail transport for a significant proportion of solidification materials and/or wastes to the facility would reduce road transportation risks, impacts and costs and would tend to favour sites with good rail access

TR-7/AP/BCOV

VOLUME 1 - GENERAL CHARACTERISTICS AND THE IDENTIFICATION OF SITE AREAS

APPENDIX B

Appendix B has been subdivided into the following subsections:

1. Relationship of Objectives to Factors
2. Site Area Identification Factors
3. Ranking of Factors
4. Role of Public Consultation Program in Factor Identification, Ranking and Application
5. Application of Factors - Maintenance of Choice-Transportation and Hydrogeology
6. Application of Factors - Exclusionary and Non-Exclusionary

A brief write-up is provided before each subsection describing its contents as well as its relationship to the analyses and conclusions contained in the main body of the report.

TR-7/AP/B.1

B1. RELATIONSHIP OF OBJECTIVES, FACILITIES CHARACTERISTICS ASSUMPTIONS AND PRINCIPLES TO FACTORS

Part of the factor identification process involved the Dillon site selection staff reviewing each of the site selection objectives to determine which were or were not appropriate for use in site area identification. It also involved exploring the relationship and role of relevant facilities characteristics and site selection principles in factor identification, ranking and application.

- Table B1.1 highlights the objectives which were addressed by the initial list of factors in site area identification. The table also lists the factors which addressed each objective as well as the reasons why the factor was addressed. In some cases comments have been made regarding the manner and level of detail to which the factors addressed the objective.

- Table B1.2 identifies the objectives which were not addressed by the initial list of factors in site area identification. The table also highlights the reasons why each objective was not addressed.

- Table B1.3 addresses the role of facilities characteristics assumptions in site area identification.

- Table B1.4 addresses the role of the site selection principles in site area identification.

- A number of additional factors were introduced into site area identification in order to maintain a diversity of siting options. The additional objectives (together with the reasons for their consideration) addressed by the new factors are highlighted in Table B1.5.

TABLE B1.1

Relationship of Objectives to Initial Site Area Identification Factors

Objectives	Factors of Concern	Reasons for Consideration/ Comments
To site facility components in hydrogeologic settings that will naturally restrict the movement of contaminants and protect groundwater resources and to utilize engineering measures where required to ensure maximum environmental safety.	• till and lacustrine plain • drumlin (Halton) • drumlin (Niagara) • drumlin field • moraine • surface granular soil • poor surface drainage • wetland • flood plain • stream course	• second level of protection concern • relates to risk • suitable for mapping at 1:50,000 • major public concern • engineering measurement addressed, requires more detailed site specific analysis
To site facility components in hydrogeologic settings that will naturally restrict the movement of contaminants and protect human health, surface water resources and aquatic ecosystems.	• till and lacustrine plain • drumlin (Halton) • drumlin (Niagara) • drumlin fields • moraine • poor surface drainage • wetland • flood plain • stream course • surface granular soil	• second level of protection concern • relates to risk • suitable for mapping at 1:50,000 • major public concern • aquatic ecosystems only addressed indirectly, requires more detailed site specific analysis
To site facility components in settings which minimize the hazards to the site as a result of such conditions as flooding, potential susceptibility to seismic disturbance, slope failures and to utilize engineering measures where required to ensure maximum environmental safety.	• flood plain • stream course • till and lacustrine plain • drumlin (Halton) • drumlin (Niagara) • drumlin fields • moraine • surface granular soil • poor surface drainage • wetland	• second level of protection concern • relates to risk • suitable for mapping at 1:50,000 • major public concern • seismic disturbance did not vary appreciably across candidate areas - slope failure and engineering measures not addressed; requires more detailed site specific analysis

TABLE B1.1 (Cont'd)

Objectives	Factors of Concern	Reasons for Consideration/ Comments
To site facility components in settings that facilitate environmental monitoring as well as the application of counter measures including back-up emergency services.	• till and lacustrine plain • drumlin (Halton)	• second level of protection • relates to risk • suitable for mapping at 1:50,000 • major public concern • counter measures and back-up emergency services are detailed site specific considerations
To site facility components to minimize potential contamination of food chains.	• agricultural cropping systems • some SEUs	• second level of protection concern • relates to risk • suitable for mapping at 1:50,000 • addressed indirectly
To site facility components to minimize the potential for exposure of populations who are sensitive to exposure and/or are difficult to evacuate.	• community and recreation features	• second level of protection concern • relates to risk • suitable for mapping at 1:50,000 • public concern • indirectly addressed as detailed population and features characteristics analysis not undertaken
To avoid destruction and minimize disruption of significant natural ecosystems.	• significant environmental units (SEU) • non-SEU woodlots greater than 20 ha	• potential environmental impact • suitable for mapping at 1:50,000 • public concern
To avoid destruction and minimize disruption of significant vegetation or wildlife populations.	• significant environmental units • non-SEU woodlots greater than 20 ha	• potential environmental impact • suitable for mapping at 1:50,000 • public concern

TABLE B1.1 (Cont'd)

Objectives	Factors of Concern	Reasons for Consideration/ Comments
To avoid destruction and minimize disruption of rare or uncommon species of plant or animal life.	• significant environmental units (SEUs)	• potential environmental impact • suitable for mapping at 1:50,000 providing within SEU • public concern
To avoid destruction and minimize disruption to significant landforms and other physical features.	• significant environmental units (SEUs)	• potential environmental impact • suitable for mapping at 1:50,000 providing within SEU • public concern
To minimize displacement of prime agricultural soils.	• agricultural land capability	• potential resource impact • public concern • suitable for mapping at 1:50,000
To minimize displacement and disruption of existing farm enterprises.	• agricultural cropping systems	• potential resource impact • potentially related to risk • suitable for mapping at 1:50,000 • public concern • addressed indirectly
To minimize displacement to other natural resource uses such as mineral aggregates.	• no factors	• such resources considered but not identified within candidate areas
To minimize disruption to productive agricultural areas and to agricultural communities.	• agricultural cropping systems	• potential resource impact • public concern • potentially related to risk • suitable for mapping at 1:50,000

TABLE B1.1 (Cont'd)

Objectives	Factors of Concern	Reasons for Consideration/ Comments
To minimize displacement of areas with a high potential for resource development.	° agricultural land capability	° potential resource impact ° potentially related to risk ° public concern ° suitable for mapping at 1:50,000 ° resources other than agriculture not identified within candidate areas
To minimize conflict with existing, committed proposed and planned land uses.	° land use factors ° airports ° Indian reserves	° potential land use, social and economic impacts ° relates to risk for some land use factors ° suitable for mapping at 1:50,000 ° public and agency concerns
To maximize the potential for the establishment of the facility components in locations characterized by similar industrial uses.	° industrial land use factors	° potential for minimizing risk, land use conflict and adverse environmental impacts ° public preference ° suitable for mapping at 1:50,000
To minimize conflict with Federal, Provincial, municipal and native communities, policies, programs and plans.	° significant environmental units (SEUs) ° agricultural land capability ° Official Plan designations ° Indian reserves ° community and recreation features ° airports	° potential environmental, social, economic and land use impacts ° public and agency concerns ° suitable for mapping at 1:50,000

TABLE B1.1 (Cont'd)

Objectives	Factors of Concern	Reasons for Consideration/ Comments
To minimize the displacement of people, particularly those groups and individuals vulnerable to change.	• residential land use designation • residential development in rural and agricultural areas • community and recreation features • Indian reserves	• second level of protection concern • relates to risk • potential social, economic and land use impacts • suitable for mapping at 1:50,000 • major public concern • addressed indirectly; detailed site specific demographic and feature analysis not undertaken
To minimize the displacement of businesses.	• commercial land use designations	• potentially serious social, economic and land use impacts • public concern • suitable for mapping at 1:50,000
To minimize the amount of private property required and the disruption to land ownership patterns.	• publicly owned lands	• potential social, economic and land use impacts • public concern • implications for agricultural and community stability
To minimize site acquisitions costs.	• publicly owned lands	• cost-related • corporate concern • only considered when no difference in risk or environmental impact • only considered indirectly; assumption that public lands less expensive

TABLE B1.2

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
MINIMIZE RISK TO HUMAN HEALTH									
Site "Pathways" Into the Environment									
• To site facility components in air sheds that have atmospheric dispersion characteristics which will protect air quality and aquatic and terrestrial ecosystems		0		0				0	• previously considered; boundaries too broad
• To site facility components to minimize hazards to the site from other uses which might contribute to the likelihood or severity of a release of contaminants		0			0	0			• each area different; requires detailed analysis
• To locate discharge locations (if required) with dispersion characteristics that will protect human health, surface water resources and aquatic ecosystems		0		0				0	• previously addressed in general terms; exact location not possible to address until site location determined

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
Site - Human Exposure									
• To site facility components to minimize the number of people who might be exposed as well as the duration of their exposure to contaminants in the event of a release		0	0						• requires detailed investigations in immediate vicinity of sites • indirectly considered through hydrogeologic and surface water factors
Transportation-Pathways into the Environment									
• To select transportation routes and modes which minimize the likelihood of a release of contaminants during transit			0		0		0		• sites must be identified before routes can be determined; indirectly considered - haulage distance
• To site facility components such that the physical settings along the access routes to the site(s) naturally restrict the movement of contaminants and protect human health, terrestrial and aquatic ecosystems		0		0		0			• site must be identified before routes can be determined

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
Transportation and Discharge-Human Exposure									
• To site facility components to minimize the number of people who might be exposed and the duration of that exposure to contaminants along access routes to the site(s) in the event of a release		0		0		0			• sites must be identified before routes can be determined
• To site facility components to minimize the potential for the exposure of populations who are sensitive to exposure and/or are difficult to evacuate along access routes to the site(s)		0		0		0			• sites must be identified before routes can be determined
MINIMIZE ENVIRONMENTAL IMPACT									
Physical and Biological									
• To minimize physical impacts on surface water such as sedimentation and changes in base flow		0		0					• requires detailed site specific investigations; potentially mitigatible

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
• To minimize impacts on surface water quality from emissions		0		0					• can't be used for site identification as does not assist in delineation of suitable areas
Resources									
• To minimize the amount of land required to safely construct and operate the facility component(s)		0		0		0			• necessitates detailed analysis of land ownership and site conditions
• To minimize disruption of economically and/or recreationally important biological resources		0		0		0			• requires site specific analysis and discussions with owners; partially addressed. SEUs and woodlots over 20 ha
• To minimize displacement of and disruption to heritage and archaeological resources		0	0	0	0		0		• too detailed for constraint mapping; potentially mitigatible
Social									
• To minimize conflict between the facility components, operations and the use and enjoyment of properties in the vicinity of the site(s), as a result of visual intrusion, noise, etc.		0	0	0	0		0		• requires detailed site specific analysis

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
• To maximize compatibility between the facility, components and the character, image, traditions, lifestyle of the affected area		0	0	0	0				• doesn't assist in boundary definition; requires detailed community analysis and consultation; partially addressed urban shadow factor
• To establish the facility components, to the extent possible, in areas in which the local communities can adapt to the type of changes which might result from the project.		0	0	0					• doesn't assist in boundary definition; requires detailed community analysis and consultation
• To minimize losses or impacts on buildings and features of archaeological, historical, symbolic, cultural or social significance.		0			0		0		• more appropriate at greater level of detail, each feature different. Major buildings and features can be checked in subsequent stages

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
• To maximize community acceptance of the facility components	0	0	0	0					• doesn't assist in boundary definition; requires detailed community analysis and consultation; may not vary by location
• To maximize compatibility with the visual character and appearance of the landscape in the vicinity of the facility components		0	0		0	0	0		• requires detailed field investigations; potentially mitigatible; addressed indirectly through land use
• To minimize conflict between the transportation of hazardous wastes to the facility components and the use and enjoyment of properties along access routes to the site(s)		0	0			0			• sites must be identified before routes can be determined

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
• To minimize conflict between facility-related traffic and local traffic by ensuring that access routes provide an acceptable level of service		0	0			0			• sites must be identified before routes can be determined
Economics									
• To maximize local employment opportunities	0	0	0	0	0				• doesn't assist in boundary definition; marginal variations among sites
• To minimize property value depreciation		0	0	0			0		• doesn't assist in boundary definition - potentially mitigatible
• To minimize disruption to the operations of local businesses		0	0	0		0	0		• requires detailed site - specific investigations - and consultation with businesses

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
• To maximize compatibility with local and regional economic character of the affected area		0	0	0					• doesn't assist in boundary definition; addressed indirectly through land use and urban shadow
• To minimize adverse effects upon provision and use of public and private community services and facilities		0	0	0	0	0			• requires detailed site specific investigations and community consultation
• To minimize the burden on municipal services and finance		0	0	0		0			• requires detailed site specific investigations and community consultation
MINIMIZE FINANCIAL COSTS TO OWMC									
• To minimize approval costs	0	0		0					• difficult to predict; may not vary substantially among locations

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
• To minimize on-site development costs, e.g. clearing, drainage, grading, screening and other engineering modifications		0		0		0			• requires detailed site specific investigation
• To minimize off-site development costs, e.g. service extensions, road improvements		0	0	0		0			• only possible to estimate once site and access routes determined
• To minimize development and/or operations costs associated with the construction and operation of the facility component(s), e.g. duplicate facilities	0	0		0		0			• only possible to estimate once site and access routes determined
• To minimize development and/or operations costs necessitated by site or area characteristics, e.g. special remedial or monitoring measures to protect human health and the environment		0		0		0			• only possible to determine once site and access routes determined

TABLE B1.2(cont'd)

Objectives Not Addressed by Site Area Identification Factors

OBJECTIVES NOT ADDRESSED IN SITE AREA IDENTIFICATION FACTORS	Doesn't Vary by Location	Needs Site Specific Field Investigations	Needs Intensive Community Dialogue	Doesn't Assist Boundary Definition	Not Possible to Generalize Across Classes	Ease of Confirmation	Potential for Mitigation	Addressed in Definition of Candidate Areas	COMMENTS
• To minimize on and off-site development and/or operations costs associated with effluent dispersion, e.g. pipelines		0		0		0			• only possible to determine once site, treatment process and utility right-of-way locations determined
• To minimize transportation operations costs associated with hauling hazardous wastes to and among facility components		0		0		0			• only possible to determine once site and access routes determined; indirectly considered-haulage distance

TABLE B1.3

Role of Facilities Characteristics Assumptions in Site Area Identification

Facilities Characteristics	Role in Site Area Identification
° waste distribution	° employed in application of transportation access factor
° waste quantities data	° used in determination of minimum site sizes
° nature of special wastes and possibility of release	° related to the degree to which different physical environmental conditions, e.g. till and lacustrine clay plain provided natural containment
° industrial nature of the facility components	° led to consideration of the degree of compatibility between the facility components and agriculture, community and recreation features, airports and other land uses ° led to siting process being structured to maximize the potential for retaining industrial or potential industrial locations
° differences in excavation requirements associated with standard landfill as compared with incinerator-physical/chemical treatment plant	° guideline approximately 10 metres or more of consistent silt-clay soil for the incinerator and physical/chemical treatment plant ° minimum of at least 10 metres (with a higher priority of investigation for areas with approximately 20 metres or more) of consistent silt-clay soils for the standard landfill
° need for buffer around probable source of emissions area for incinerator-physical/chemical treatment plant (in all but heavy industrial areas)	° led to the establishment of a 400 m buffer around community and recreation features, residential and commercial land uses
° potential for displacement of uses and features within the site	° led to the desire to avoid highly sensitive or significant natural environmental resources, significant agricultural uses, major existing and planned residential and commercial areas and major community and recreation features

TABLE B1.4

Role of Site Selection Principles
in Site Area Identification

Principles	Factor Identification	Factor Ranking	Factor Application	Role in Phase 3B Site Selection
Progressive Refinement of the Search Process	0			° analysis limited to information which could be mapped and levels of suitability differentiated at a scale of 1:50,000
	0			° constraint mapping limited to detailed reviews of reports and secondary source materials, ministry and agency discussions, air photo interpretation and preliminary field checks
	0			° potential constraints which would not vary substantially by location not considered
		0	0	° factor - low ranking, i.e. low constraint if information base regarding potential suitability very limited
		0	0	° factor ranked low if considerable range of suitability among features encompassed by factor
Definition of the Environment	0	0	0	° factors encompass a range of hydrogeologic, hydrologic, natural environmental, natural resources, existing and planned land use factors and community and recreation features
				° several additional land use, agricultural, transportation and environmental factors were also considered in the maintenance of choice deliberations
		0	0	° factors received low ranking if positive factor in minimizing adverse environmental impacts, if minor constraint or if can be readily mitigated

TABLE B1.4 (Cont'd)

Role of Site Selection Principles in Site Area Identification

Principles	Factor Identification	Factor Ranking	Factor Application	Role in Phase 3B Site Selection
		0	0	° factor received high ranking if major potential environmental impact
Protection of Human Health and the Environment	0			° factors pertaining to ability of hydrologic environment to inhibit the movement of contaminants, e.g. till and lacustrine clay plain
	0			° factors pertaining to potential hazards to the site, e.g. flood plain
	0			° factors pertaining to human exposure, e.g. residential land use
	0			° factors pertaining to air safety
	0			° other risk related objectives, e.g. transportation risk, population density considered in diversity of choice deliberations
		0	0	° factor received low ranking, i.e. low constraint if positive factor in providing a second level of environmental protection
		0	0	° factor received high ranking if strong likelihood of severe risks
The Involvement of Those Affected	0			° general public concern with ground water contamination, surface water contamination, agriculture, social and community impacts (as reflected in land use and community and recreation factors) were reflected in factors

TABLE B1.4 (Cont'd)

Role of Site Selection Principles
in Site Area Identification

Principles	Factor Identification	Factor Ranking	Factor Application	Role in Phase 3B Site Selection
	0			• public concerns with transportation risk, desire to have sources of special waste, and air dispersion/air quality indirectly considered through the maintenance of choice transportation considerations
	0			• public concern with community character and lifestyle not considered as would require detailed community interviews
	0			• public concern with traffic hazards, noise and odours not considered as would require site-specific investigations
		0	0	• public concern with wildlife and environmentally sensitive areas did not receive high ranking because of range of suitability among features encompassed by factor
		0	0	• agricultural factors not ranked as highly as public preference because of desire to maintain diversity of siting opportunities
	0	0	0	• general site selection issues raised through OWMC public consultation program highlighted in Table C4.1
	0	0	0	• a series of site selection workshops were undertaken in the fall of 1983 and in early 1984 which addressed the type and role of site area identification factors; role in identification, ranking and application of the site area identification factors is highlighted in Table C4.2 and C4.3

TABLE B1.4 (Cont'd)

Role of Site Selection Principles
in Site Area Identification

Principles	Factor Identification	Factor Ranking	Factor Application	Role in Phase 3B Site Selection
Efficiency and Effectiveness of the Process	0	0	0	° reflected in staged approach and decision to limit the site area identification process to those factors which could be mapped at a scale of 1:50,000 using data derived largely from air photo interpretation, agency contacts, reviews of secondary source materials and preliminary field checks ° also reflected in focus on major potential risks and impacts as well as on agency and public priorities ° reflected in focus on areas with greater likelihood of suitability
A Second Level of Protection of the Environment	0			° hydrogeologic and surface water factors address the issue of the potential for natural containment
	0			° principle from the receptor perspective reflected in the agricultural, natural environment, land use and community and recreation features factors
	0		0	° principle in terms of transportation risk and air quality addressed indirectly in the maintenance of choice analysis

TABLE B1.4 (Cont'd)

Role of Site Selection Principles in Site Area Identification

Principles	Factor Identification	Factor Ranking	Factor Application	Role in Phase 3B Site Selection
Likelihood of Suitability		0	0	• factors received high ranking, i.e. high constraint if strong likelihood that affected area would not be suitable and could only be confirmed with very detailed investigations, e.g. drilling
		0	0	• factors received low ranking, i.e. low constraint if potentially unsuitable but suitability or lack of suitability can be readily confirmed
Maintenance of Choice		0	0	• where tradeoff and some doubt regarding which factor or factor grouping should take precedence, sufficient examples of each side of tradeoff retained
	0	0	0	• attempt made to retain a range of site areas for those factors which would not be introduced until subsequent stages of candidate site identification

TABLE B1.5

Relationship of Objectives to Additional Site Area Identification Factors

Objectives	Factors of Concern	Reasons for Consideration/ Comments
To select transportation routes and modes which minimize the likelihood of a release of contaminants during transit	• transportation accident probability index	• risk-related • second level of protection • maximizes diversity of choice - transportation • major public concern • conditional factor in conjunction with other factors
To minimize disruption to productive agricultural areas and to agricultural communities	• agricultural land designated for industrial and unspecified urban uses • urban shadow areas • public lands	• potential environmental impact • public concern • ownership a consideration in community stability • conditional factor in conjunction with other factors
To minimize transportation operations costs associated with hauling hazardous wastes to and among facility components	• transportation accident probability index	• cost-related but linked to risk • conditional factor in conjunction with other factors • only considered as an additional advantage resulting from risk-related factors
To site facility components such that the physical settings along the access routes to the site(s) naturally restrict the movement of contaminants and protect human health, terrestrial and aquatic ecosystems	• crossings of sensitive lands • stream crossings	• risk-related • second level of protection • public concern • potential natural environmental impacts • conditional factor in conjunction with other factors

TABLE B1.5 (Cont'd)

Objectives	Factors of Concern	Reasons for Consideration/ Comments
To site facility components to minimize the number of people who might be exposed and the duration of that exposure to contaminants along access routes to the site(s) in the event of a release	• distance through built-up urban areas • number of communities by population • number of residences • number of community features • number of recreation features • distance through residential land use designations	• risk-related • second level of protection • conditional factor in conjunction with other factors • potential social and land use impacts
To site facility components to minimize the potential for the exposure of sensitive human populations along access routes	• number of residences • number of active farm complexes • number of community features • number of recreation features • distance through residential land use designations	• risk-related • second level of protection • public concern • conditional factor in conjunction with other factors • potential social and economic impacts
To minimize conflict between the transportation of hazardous wastes to the facility components and the use and enjoyment of properties along access routes to the site(s)	• distance through built-up urban areas • number of residences • number of active farm complexes • distance through residential land use designations • number of community features • number of recreation features	• public concern • potential land use; social and economic impact • conditional factor in conjunction with other factors
To minimize conflict between facility-related traffic and local traffic by ensuring that access routes provide an acceptable level of service	• transportation accident probability index	• risk-related • potential social, transportation and economic impact • conditional factor in conjunction with other factors

B2. SITE AREA IDENTIFICATION FACTORS

The factors employed in site area identification are defined and their significance described in this subsection.

Table B2.1 provides factor definitions and descriptions of significance for all the site area identification factors, with the exception of those which were introduced as part of the maintenance of choice deliberations.

Table B2.2 defines and describes the significance of:

- the additional factors introduced for the public, industrial and urban land analysis;
- the urban shadow factor;
- the two factors used to determine the relative accessibility of different portions of the candidate areas;

Table B2.3 defines and describes the significance of the factors employed to compare alternative access roads into candidate area 18;

Detailed factor sheets for each of the factors employed on site area identification area provided in the other site selection technical reports.

TABLE B2.1

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
1. **PHYSICAL AND BIOLOGICAL RESOURCES**	
1.1 Till and Lacustrine Clay Plain	
Level to gently rolling areas of silt clay soils that, in the Niagara Peninsula, were originally the bottom of a glacial lake. In the Halton area, the clay plains are primarily glacial till, left behind when the glacier melted.	The fine grained soils of these areas should act to inhibit the underground movement of contaminants.
1.2 Drumlin (Halton)	
Drumlins are distinct oval shaped hills of glacial till.	The drumlins in Halton consist of the same fine grained silty to clayey Halton Till that occur in the surrounding areas. As such, they should have the same potential for siting facilities as described under the Till and Lacustrine Clay Plain factor except for the potential for more severe slopes.
1.3 Drumlin (Niagara)	
Drumlins are distinct oval shaped hills of glacial till.	The drumlins in this area are composed of the granular Wentworth Till, which could provide pathways for off-site migration of contaminants into the ground water.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

	FACTOR DEFINITION	SIGNIFICANCE
1.4	Drumlin Field	
	The extent of the drumlin field shows the approximate limits of an area which may contain buried drumlins consisting of granular Wentworth Till. Known locations of drumlins exposed at the surface also occur within this area.	Should buried drumlins or other areas of Wentworth Till be encountered in this area, they could provide pathways for off-site migration of contaminants in the ground water from a facility located in such an environment.
1.5	Surface Granular Soil	
	Surface granular soils include sand and gravel derived from a variety of sources and their thickness and relationship to both underlying and adjoining materials are largely unknown.	Surface granular soils are significant because they provide ready pathways for off-site movement of contaminants in the ground water flow system, which could adversely affect both surface and ground water resources.
1.6	Moraine	
	These features are primarily composed of glacial till materials that have been dragged along by glacier movement. Lenses and pockets of granular materials may be associated with these features, occurring either at the surface or buried beneath the till.	The possible inclusion of buried pockets of granular soils could provide potential migration paths for off-site contaminant movement. The geological history of a location suggests the possible occurrence of variable subsurface conditions.
1.7	Poor Surface Drainage	
	Areas of the clay plain in the Niagara Peninsula which contain numerous shallow depressions. These depressions may contain shallow organic soils and may hold water for most of the year.	The individual wetland features found within this area are not of high significance to the location and construction of facilities. They may require drainage and other engineering works (i.e. ecavation and filling) but

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	may also require remedial measures to control potential adverse effects of site drainage.
1.8 Wetland	
These are depressional areas which may have high water table conditions and/or standing water for much of the year. They usually support the growth of wetland type plants.	These areas may require remedial drainage and/or excavation and filling for the construction of facilities. Poor foundation materials, the presence of saturated soils or flooding conditions, and the possibility of movement of potential contaminants within the wetland areas are the major items to contend with when considering these areas for siting facilities.
As a result of the decay and accumulation of plant material, shallow organic soils have developed in these areas.	These areas may also serve a natural function of regulating stream flow by helping to reduce flooding during periods of high run-off and by augmenting stream flow during dry periods. Aside from losing this role, should they be used as a facilities site, they have potential importance from a biological point of view in that they may support aquatic life and vegetation associations that wildlife depend on. In some instances they may be used for watering of domestic animals and wildlife.
1.9 Stream Course	
These streams represent the major tributaries to the main creeks and rivers. They have distinct valley forms as identified on 1:50,000 scale air photos.	Surface watercourses provide an avenue for the rapid movement of potential contaminants, thus potentially affecting potable water supplies and aquatic life.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	Facilities located in stream course valleys may also be subject to structural damage by flooding. In some cases, mitigation may be possible.
1.10 Flood Plain	
These areas are flat lands adjacent to rivers or stream courses which may flood from time to time, especially during spring run-off or as a result of heavy prolonged storms.	Inundation or damage caused by flooding of any of the facilities could result in the rapid release of contaminants into surface water. To avoid flooding of the facility, fill would have to be placed and adequately protected. However, this could cause a constriction to the normal hydrology of the stream, which would need site specific study. The alluvial soils of the flood plain are often granular textured and could allow easy off-site migration of contaminants.
1.11 Significant Environmental Units (SEUs)	
Significant environmental units (SEUs) recognized in published reports on regional studies have been documented. Major sources of information include reports prepared by or for Conservation Authorities, Regional Municipalities and the Ministry of Natural Resources. MNR materials include areas of Natural and Scientific Interest files, District Land Use Guidelines and fish migration route maps.	Significant environmental units may: ° contain populations of rare or uncommon plants or animals; ° perform significant environmental functions; ° provide habitat for species which require extensive territories; ° contain unique biological associations or communities;

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	- maintain a significant warm water fishery which provides fishing opportunities or serve as cold water fishery migratory routes; - represent significant earth science features. The rationale is to avoid elimination of and to minimize impacts on areas which are known to be environmentally significant.
1.12 Non-SEU Woodlots Greater Than 20 ha	
Wooded areas which are not significant environmental units but which are greater than 20 ha (50 acres) in area.	This factor indicates the presence of a vegetated unit which may have value as a forestry or recreational resource or provides wildlife habitat. This factor flags areas which may have potential for significance but may not have been studied during environmentally significant area or other inventories.
2. **AGRICULTURE**	
2.1 Agricultural Land Capability	
Agricultural land capability represents the potential and limitations of the land for growing common field crops (e.g. corn, wheat, hay).	Highly productive soils with a favourable climate for producing agricultural crops are in short supply in Canada. Loss of such soils to non-agricultural uses limits future food production potential and weakens local agricultural economies.
The capability system used to rate candidate area	Using parts of these agricultural lands for non-agricul-

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
soils is the Soil Capability for Agriculture system of the Canada Land Inventory. Soil survey information was obtained from the Ontario Institute of Pedology.	tural purposes will have impacts on existing and future crop production. The greatest impact would occur if Class 1 and 2 lands were taken out of production and the least impact would occur if Class 5, 6 or 7 lands were taken out of production.
° Class 1 land is potentially the most productive for common field crops. ° Class 2 land is potentially 80% as productive as Class 1 land for field crops. ° Class 3 land is potentially 64% as productive as Class 1 land for field crops. ° Class 4 land is 49% as productive as Class 1 land for field crops. ° Land classified as Class 5, 6 or 7 is the least productive agricultural land (less than 32% as productive as Class 1 land).	Besides their higher crop yield potential the higher capability soils are able to support a broader range of crop types and thus have more flexibility for adaptation of future production technology.
There is no available system for evaluating land for specialty crops such as fruits.	
2.2 Agricultural Cropping System	
A description of the current cropping activity in the candidate areas based	The mapping of existing agricultural cropping indicates the type and level of utiliza-

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
on mapping of crop rotation systems. Agricultural Land Use Systems maps were prepared by the Land Resource Research Institute of Agriculture Canada and the Ontario Ministry of Agriculture and Food.	tion of the land resource for the production of crops. Different combinations of crops, known as rotations or cropping systems, are generally indicative of associated livestock rearing and of the level of intensity or relative level of inputs being employed.
The ranking of cropping systems used for the preparation of the map for this factor is as follows: 1. specialty crops 2. row crops or corn-wheat systems 3. mixed or cereal grain, hay-grain or hay (good quality) systems 4. hay (poor quality), pasture or grazing 5. non-agricultural land uses The above ranking orders the crop rotation systems from the highest levels of management inputs to the lowest.	The removal of land mapped as high intensity cropping systems would generally result in a higher level of impact on existing farm enterprises than the loss of land shown as low intensity systems. Similarly, enterprises surrounding a site that are situated in high intensity cropping systems would experience higher levels of impact than would those situated in lower intensity systems.
3. **LAND USE AND LAND OWNERSHIP**	
3.1 Industrial Lands Designated in Official Plan, Built Upon	
Lands designated for industrial use in area municipality official plans and	Industrial uses are often characterized by noise, airborne emissions, rail and

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
in conformity with regional official plans, which are built upon.	truck traffic, etc. The location of most built-up industrial areas is generally well-separated from residential areas. (There are exceptions.) Most have good road (and in many cases, rail) access.
	Industrial areas usually exhibit low daytime population density and negligible night-time populations. This population tends to have a low proportion of persons in high risk categories, e.g. the disabled, the elderly, and the young (although some industries have a high percentage of women of childbearing age).
	The OWMC facilities, except for the landfill, are essentially industrial in character and will have a substantial degree of suitability to many of the future uses in these designated industrial areas.
	Built-up industrial areas contain a wide variety of industrial and related buildings and uses. Intensity of use varies greatly, as does parcel size. Siting opportunities occur primarily in terms of replacement of obsolete or low intensity uses, and will most likely be feasible only if a single large property is available.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
3.2 Industrial Lands Designated in Official Plans, Internal Roads and Services, Vacant	
Lands designated for industrial use in area municipality official plans and in conformity with regional official plans with internal roads and services constructed but unoccupied or vacant.	The areas designated for industrial use within the candidate areas are, generally speaking, subject to Official Plan designations that permit a wide range of industrial uses. It can therefore be anticipated that future industries include those characterized by noise, some airborne emissions, rail and truck traffic, etc. The location of industrial areas is generally well-removed from residential areas. (There are some exceptions.) Most have good road (and in many cases, rail) access. Industrial areas usually exhibit low daytime population density and negligible night-time populations. This population tends to have a low proportion of persons in high risk categories, e.g. the disabled, the elderly, and the young (although some industries have a high percentage of women of childbearing age). The particular significance of internally-serviced industrial land is threefold; compared with similar land which is unserviced, these areas are ready for immediate development (which may, in fact, occur before the end of the

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	OWMC study), have a substantial infrastructure investment in the ground, and have a quite different pattern of land division and ownership from unsubdivided land. Acquisition of large parcels of land is expected to be more time-consuming and expensive than would be the case with unserviced land. The OWMC facilities, except for the landfill, are essentially industrial in character. For this reason the OWMC uses will have a substantial degree of suitability to many of the future uses in designated industrial areas.
3.3 Industrial Lands Designated in Official Plans, Vacant Lands designated for industrial use in area municipality official plans and in conformity with regional official plans, vacant and unserviced.	The areas designated for industrial use within the candidate areas are, generally speaking, subject to official plan designations that permit a wide range of industrial uses. It can therefore be anticipated that future industries will include those characterized by noise, airborne emissions, rail and truck traffic, etc. The location of industrial areas is generally well removed from residential areas. (There are some exceptions.) Most have good road (and in many cases, rail) access.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	Industrial areas usually exhibit low daytime population density and negligible night-time populations. This population tends to have a low proportion of persons in high risk categories, e.g. the disabled, the elderly and the young (although some industries have a high percentage of women of childbearing age). The OWMC facilities, except for the landfill, are essentially industrial in character. For this reason, the OWMC uses will have a substantial degree of compatibility with many of the future uses in these designated industrial areas. The time frame for development of these lands can generally be expected to be much longer term than for internally serviced industrial land. It is likely that a large part of these lands will remain unbuilt for the next decade, possibly two decades. Acquisition of large parcels is expected to be more expensive than for agricultural land but much less than for internally serviced industrial land.
3.4 Residential Lands, Designated in Official Plans, Built Upon	
Lands designated for residential use in area municipality official plans and in conformity with regional official plans, which are built upon.	Residential designations do not normally allow any type of industrial use, particularly in suburban areas. Industrial uses are generally considered incompatible for a wide range

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	of reasons, including truck traffic, noise and vibrations, dust, odours, etc. Industrial users are reluctant to locate in residential areas because of the high probability of resident complaints based on nuisance and health concerns. With specific reference to OWMC facilities, residential areas have high day and night time populations and high percentage concentrations of at-risk populations, e.g. the young and the elderly. Residential areas may be difficult to evacuate in the event of an accident. In terms of site acquisition, built-up residential areas have highly fragmented ownership, and land assembly will be time-consuming and very expensive.
3.5 Residential Lands, Designated in Official Plans, Internal Roads and Services, Vacant	
Lands designated for residential use in area municipality official plans in conformity with regional official plans with internal roads and services constructed but unoccupied or vacant.	Residential designations do not normally allow any type of industrial use, particularly in suburban areas. Industrial uses are generally considered incompatible for a wide range of reasons, including truck traffic, noise and vibrations, dust, odours, etc. Industrial users are reluctant to locate in residential areas because of the high probability of resident complaints based on nuisance and health concerns.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	With specific reference to OWMC facilities, residential areas have high day and night time populations and high percentage concentrations of at-risk populations, e.g. the young and elderly. Residential areas may be difficult to evacuate in the event of an accident. In terms of site acquisition, internally serviced residential areas are typically covered by registered plans and lots have been sold to builders. Land assembly will be very time consuming and/or expensive.
3.6 Residential Lands Designated in Official Plans, Vacant Lands designated for residential use in area municipality official plans and in conformity with regional official plans, vacant and unserviced.	Residential designations do not normally allow any type of industrial use, particularly in suburban areas. Industrial uses are generally considered incompatible for a wide range of reasons, including truck traffic, noise and vibrations, dust, odours, etc. Industrial users are reluctant to locate in residential areas because of the high probability of resident complaints based on nuisance and health concerns. With specific reference to OWMC facilities, residential areas have high day and night time populations and high percentage concentrations of at-risk populations, e.g. the young and the elderly. Residential areas may be difficult

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	to evacuate in the event of an accident. In terms of site acquisition, future residential areas are typically subject to speculation and fragmentation of ownership, making land assembly time-consuming and/or expensive.
3.7 Residential Development In Rural and Agricultural Areas Existing residential development outside existing urban development and hamlets.	Rural residential uses typically take the form of strip development along highways or local roads and are often intermixed with agricultural, retail and small industrial uses. Lot sizes and setbacks are larger than for urban residential uses, and water is usually obtained from wells. Rural residential uses are numerically less significant than urban residential uses because of lower densities. Rural residential strip development is exposed to higher background levels of traffic and noise. However, most of the concerns relevant to urban residential areas will apply, and there may be a particular concern for maintaining the potability of well water supply. These areas are subject to fragmentation of ownership.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
3.8 Commercial Lands Designated in Official Plans, Built Upon Lands designated for commercial use in area municipality official plans and in conformity with regional official plans, which are built upon.	Commercial activities attract large daytime and evening populations of workers and customers over an 8 or 12 hour span, 5 or 6 days a week. Both the work force and customer populations may include a high proportion of women of childbearing age. The population will be mobile and relatively easy to evacuate in the event of an incident. Capital investment in commercial areas is generally intensive. The potential closure of small businesses is a concern.
3.9 Commercial Lands Designated in Official Plans, Vacant Lands designated for commercial use in area municipality official plans, in conformity with regional official plans, no internal servicing, vacant.	Commercial activities attract large daytime and evening populations of workers and customers over an 8 or 12 hour span, 5 or 6 days a week. Both the workforce and customer populations will include a high proportion of women of childbearing age. The population will be mobile and relatively easy to evacuate in the event of an incident. Capital investment in commercial areas is generally intensive. The potential closure of small businesses is a concern. It is possible that the total amount of commercial desig-

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	nated land in any given area exceeds the amount which can be absorbed for commercial use over the next one or two decades. The question as to whether commercial designations are excessive will be addressed at subsequent stages of the process.
3.10 Residual Lands Within Urban Envelopes, Regional Official Plans Lands within an urban development envelope defined in regional official plans, but not designated for urban uses in local official plans.	The designation of lands within the urban or hamlet development envelopes implies a commitment to a change in land use within the time frame of the plan, usually from agricultural to urban use. These designations have not been fully incorporated into all the local official plans, however, and there remain areas committed to future urban use which do not have a specific urban use designation.
3.11 Provincial Planning Areas Lands designated within the Parkway Belt Planning Area and the Niagara Escarpment Planning Area.	These two provincial planning documents are of significance in the vicinity of Candidate Areas 1 through 5 and 14. The Parkway Belt plan restricts uses to those "compatible" with the Parkway Belt, i.e. agricultural and recreational uses; transportation, utility and pipeline corridors and other acceptable uses. The Niagara Escarpment Commission (N.E.C.) Plan's controls are aimed at preserving the natural character of the Escarpment

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	and its adjacent scenic areas, and its provisions would prohibit OWMC type facilities.
3.12 Rural Designations - Official Plans	
Rural designations in area municipality official plans which distinguish between Agricultural and Rural designations.	The majority of area municipality official plans utilize the terms "Rural" and "Agricultural" interchangeably to refer to all those lands not designated for some other use. However, a few plans contain both an Agricultural and a Rural category, utilizing the Agricultural category to define prime agricultural land the Rural classification for the balance of the lands. The Niagara Region Official Plan provides for a "Rural" designation for lands predominantly in Classes 4-7 in capability. This designation has been incorporated into several area municipality official plans. Although not so designated, lands of similar agricultural capability in other municipalities could be given a similar factor ranking.
3.13 Publicly Owned Lands	
Publicly owned lands include those lands owned by federal, provincial or municipal agencies.	Publicly owned lands are intended for uses which benefit the population at large. Use of these lands would minimize impacts upon private landowners. More specifically, the location of an OWMC facility on publicly owned lands would involve less acquisition of lands in private ownership.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	Publicly owned lands may also represent a siting opportunity depending upon the nature of the lands and the existing land use.
3.14 Indian Reserves Indian reserves are all those lands set aside by the federal government for the sole and exclusive use of aboriginal peoples.	Aboriginal peoples have unique social and cultural characteristics, and consequently Indian reserves are of very high social and cultural value. The allocation of these lands by the federal government precludes the provincial taking of these lands. It would be inappropriate to displace any of these lands for an OWMC facility.
4. **COMMUNITY AND RECREATION FEATURES**	
4.1 Hospitals These are regionally serving hospitals with specialized facilities and/or emergency capabilities.	These are major, regionally serving health facilities with special siting and accessibility requirements. They contain a large, temporary population of "residential" nature with varying degrees of incapacitation. A regional hospital would not generally be considered compatible with industrial uses.
4.2 Nursing Homes These are as defined by The Nursing Home Act, Ministry of Health. Residents require a minimum of one and one-half hours of nursing care daily. The premises are maintained and	These contain a residential incapacitated population. The majority of residents are elderly. Nursing homes would not generally be considered compatible with industrial uses.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
operated for persons requiring nursing care or in which such care is provided to two or more unrelated persons.	
4.3 Homes for the Aged	
These are as defined under the Homes for the Aged Act. Homes are provided for persons over 60 years of age or under special circumstances, those who cannot be cared for adequately elsewhere. They provide residential services and may also have extended care services. The homes may be under a municipal or private board of management jurisdiction.	These contain primarily an elderly residential population, with varying degrees of incapacitation. The industrial nature of OWMC facilities is incompatible with the residential nature of Homes for the Aged.
4.4 Institutions for the Disabled	
These are institutions providing residential care for disabled individuals.	These contain residential populations of varying sizes with varying degrees of incapacitation. Such uses would not be considered compatible with industrial uses.
4.5 Regional Shopping Centres	
This factor includes regionally serving shopping centres, as defined by relevant official plans.	These may conflict with OWMC facilities due to the presence of a large, temporary population. The size of such facilities would preclude relocation. The potential for disruption of activities and the loss of revenue are also potential concerns.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
4.6 Public Buildings The public building factor includes those whose functions serve a larger area than the local community, i.e. courthouses, provincial ministry and federal buildings, regional and county government buildings and regional police headquarters.	These contain large, temporary populations. Such facilities would not generally be considered compatible with industrial uses. The accessibility and ability of regional police headquarters to carry out normal activities and handle emergencies must not be hindered or impaired.
4.7 Schools This factor includes public, private and separate schools at the elementary and secondary levels.	Private schools may have a residential component. Temporary populations of predominantly children are not compatible with the industrial nature of OWMC facilities.
4.8 Special Educational Facilities This factor includes schools for the mentally and physically disabled, schools for the blind and deaf, and schools for the trainable retarded.	These contain temporary or residential populations, partially incapacitated. Health and welfare of students and staff is a major consideration. There is also a potential for conflict with the industrial nature of OWMC facilities.
4.9 Post Secondary Education Facilities This factor includes colleges and universities under the jurisdiction of the Ministry of Colleges and Universities. It includes main and satellite campuses. Also included are facilities such as private vocational schools	These contain a large temporary or, in some cases, residential population not suitable for location near industrial type facilities. In some instances, size of plant would preclude relocation.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
providing higher education to local and regional communities.	
4.10 Conservation Areas	
This factor includes lands of any size under the jurisdiction of a conservation authority intended for parks or other recreational purposes.	The presence of varying temporary population levels is of concern as is the potential for disruption or displacement of recreational resources.
4.11 Parks	
Parks include all those major parks under municipal, regional, provincial, federal, private, agency or community group jurisdiction (excluding conservation areas). The parks may be used for active or passive recreational pursuits with varying degrees of development. Only major parks which serve a broad geographic area were considered at this stage. Community and neighbourhood parks have not been included at this phase.	These are relevant as significant providers of recreational opportunities and facilities for regional residents. Temporary populations are of concern, as well as potential for disruption.
4.12 Golf Courses	
This factor includes all golf courses under municipal, commercial or private ownership.	These are relevant as recreational facilities attracting a seasonal daytime user population. The potential for displacement or disruption of recreational activities and loss of revenue are also of significance.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
4.13 Commercial Recreation Facilities	
This factor includes regionally serving facilities providing recreation opportunities or tourist attractions which cannot be defined under any other type of recreation feature. Examples of these facilities would be establishments offering any variety of tours, such as boat tours.	These are relevant as significant providers of recreation opportunities and facilities and/or tourist attractions. Temporary populations are of concern, as well as potential for disruption and/or loss of revenue to operators.
4.14 Community Centres	
This factor includes centres providing social, recreational and educational facilities for the community. Emphasis is given to community centres serving more than the local population and providing primarily recreational and cultural facilities and opportunities.	The industrial nature of OWMC facilities may be in conflict with the population using the community centres and their recreational facilities.
4.15 Cultural Centres	
This factor includes centres providing cultural opportunities and related facilities for specific groups or the community at large.	These facilities may contain large temporary populations. The potential for disruption of use of facilities is also of significance.
4.16 Museums	
This factor includes buildings which store and exhibit objects illustrating natural history, art, agriculture, transportation, sports, etc. It includes museums under the	These contain temporary visitor populations. The cultural and historical significance of museums and their contents could be in conflict with the industrial nature of OWMC facilities.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
jurisdiction of Parks Canada, Ministry of Natural Resources, Conservation Authorities, municipalities, private boards of management, historical societies, etc.	
4.17 Theme Parks This factor includes intensely developed parks providing a variety of activities, amusements and entertainment which are centred around a particular theme. The parks cater largely to regional and tourist markets.	These contain a large, temporary population with a large proportion of tourists. Use may or may not be seasonal. There is the potential for disruption to normal activities or loss of revenue. Such facilities would not generally be considered compatible with industrial uses.
4.18 Fairgrounds and Exhibitions This factor includes fairgrounds and exhibitions under municipal and provincial jurisdiction. It includes agricultural fairs and exhibition grounds used only several times annually as well as those with community and recreational functions used regularly throughout the year.	These attract varying temporary population levels. They may also provide recreational and community facilities and/or a tourist attraction which have potential for disruption.
4.19 Campgrounds This factor includes all campgrounds under any ownership. Included are tent and trailer campgrounds, camps for children, adults and other groups and lodges.	These are temporary "residential" facilities. The potential for temporary loss of use of campgrounds, displacement of facilities and loss of revenue is also a consideration.

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
4.20 Public Sports Facilities	
This factor includes recreational complexes, fitness centres, swimming pools, arenas and major regionally serving facilities such as sports fields and ball parks under public ownership.	Significance lies in the temporary population using the sports facilities and the potential for disruption of use of facilities or loss of recreational opportunities.
4.21 Private Sports Facilities	
This factor includes recreational centres, fitness centres, swimming pools and marinas under private ownership, agencies (such as YMCA) or community group ownership.	The temporary population using the sports facility is of concern as is the potential for disruption of use of facilities or displacement of facilities. The potential for loss of revenue to operators is also of significance.
5. TRANSPORTATION	
5.1 Airports	
Airports within the candidate areas could be affected by construction of OWMC facilities. The flight paths over the ground approach to these airfields could be in conflict with the height of physical structures required on an OWMC site(s). This in turn may affect the airport license and/or operation.	Obstacle control protection exists at Lester B. Pearson International and Hamilton Civic as defined by Transport Canada Regulations. This regulation prohibits vertical obstructions exceeding 45 m within a radius of 4000 m from a theoretical reference point(s) at each airport. The reference point(s) are located as near as practical to the geometric centre of individual landing areas with adjustment for future development. Within the 4000 m radius, more restrictive vertical controls exist. These are oriented with respect to the individual

TABLE B2.1 (Cont'd)

Site Area Identification Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	runways and are most restrictive off the ends of the runways as opposed to the transverse edges of the runways. All other airports located within the mapped coverage of the candidate areas do not enjoy obstacle control protection. However, infringement within the theoretical control areas could adversely affect the license or the operation of these airfields and thus would impact the present use.

TABLE B2.2

Additional Site Area Identification Factors Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
Agricultural lands designated for industrial and unspecified urban uses	
Lands with relatively high agricultural capability (see Agricultural Land Capability/ Agricultural Cropping System) but which are designated for industrial use in Official Plans (see industrial lands designated in Official Plans), are within urban or hamlet development envelopes defined in regional Official Plans (see Residual Lands within Urban Envelopes, Regional Official Plans) or are publicly owned.	Although such lands have the short term potential for agricultural use the long term agricultural potential of such lands is more doubtful. It was considered advisable to analyse such lands in more detail as they may be preferable to agricultural lands designated for agricultural or rural uses.
Urban shadow areas (lands subject to urban influence)	
Areas where the pressures of urbanization have altered the agricultural land base, infrastructure and/or agricultural community sufficiently to place the long term future of the agricultural community in doubt.	Impacts to the agricultural land base, economy and community are potentially lower on lands undergoing urban-related change than on lands which have been relatively free of such destabilizing pressures.
Tonne kilometres of waste hauled	
Assuming road transport of special wastes by trucks, the distance travelled and total annual loadings from source sites to alternative receiver sites provides an indicator of transportation system efficiency and transport cost. The measurement used is tonne kilometres.	The tonne kilometre value obtained for each site is a surrogate for transport haulage cost. Each site is indicative of a region or portion of the candidate areas. Those sites or regions which exhibit lower tonne kilometre values are more desirable than sites with higher values.

TABLE B2.2 (Cont'd)

Additional Site Area Identification Factors
Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
Transportation accident probability index The combination of the tonne kilometres of waste hauled from waste sources with the average annual accident rate by road classification produces a value which can be compared between sites to produce an index of relative accident probability.	The transportation accident probability index is a surrogate value for accident risk. Those access routings with a lower accident probability index are more desirable from a transportation perspective than those routings which exhibit a higher accident probability index.

TABLE B2.3

Additional Site Area Identification Factors
Access Route Comparison - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
HUMAN ENVIRONMENT	
Transportation Safety	
Proximity to Freeways	
The location of OWMC facilities, in reasonably close proximity to freeways, is viewed to be a desirable attribute.	The impact of road transportation to and from OWMC facilities and in relation to local communities and populations, would generally be minimized where sites are close to freeway systems and arterial road interchanges with the freeway.
Transportation Accident Frequency	
The combination of proximity to freeways with the average annual accident rate by road classification produces a value which can be compared among site areas to produce a relative accident frequency value.	The transportation accident frequency value is a surrogate value for accident risk along routes for freeways. Those access routings from freeways with lower accident frequency values are more desirable from a transportation perspective than those routings which exhibit higher accident frequency values.
Existing Residents	
Distance Through Built-up/Urban Areas	
This indicator is a measure of the actual distance trucks would travel through built-up/urban areas along access roads.	Impacts through built-up/urban areas include increased noise and truck traffic and an increased threat to safety. The potential risk as a result of possible spills must also be considered. Access routes which avoid or have a reduced distance through built-up/

TABLE B2.3 (Cont'd)

FACTOR DEFINITION	**SIGNIFICANCE**
	urban areas are more desirable than routes with long distances through built-up/urban areas.
Number of Communities by Population	
This indicator refers specifically to the number of communities through which the access routes pass. The approximate population of these communities are also noted.	Access routes passing through few or no communities were considered more desirable than those access routes passing through many, highly populated communities.
Number of Residences	
The number of residential units fronting access routes, including residences and farm residences were considered. Residences in urban areas were not included.	Transportation impacts through areas with many residences include increased noise and truck traffic and a possible increased threat to safety. Access routes which have fewer abutting residences are more favourable than routes with many abutting residential uses.
Existing Resources	
Number of Active Farm Complexes	
Farm complexes include all farm buildings such as barns, storage sheds, silos, grain bins, manure storage, etc.	The number of active farm complexes along the access road indicates the probable degree of conflict between truck movement and movement of farm machinery. The tendency should be to choose sites with access roads that have the fewest number of active farm complexes.
Existing Community and Recreation Features	
Number of Community Features	
Features under both private and public jurisdiction which	Impacts along access roads which have abutting community

TABLE B2.3 (Cont'd)

FACTOR DEFINITION	SIGNIFICANCE
provide educational, health and safety, correctional and government services to a municipality which fronted on access roads are included. Examples include schools, police and fire stations, hospitals, nursing homes and special educational facilities.	features include increased noise and possible conflicts with other vehicular traffic presently using these access routes (e.g. school buses). Increased traffic noise in quiet zones around hospitals or nursing homes is also not desirable.
Number of Recreation Features	
Features under both public and private jurisdiction which provide recreational and leisure opportunities for residents are included. Features such as museums, sports complexes, golf courses, parks, fairgrounds and community and cultural centres are included in this category.	Increased truck traffic and noise may have an impact on the enjoyment derived from recreational and leisure features. In addition, increased truck traffic may lead to conflicts with other vehicular traffic presently gaining access to such features.
Future Residents	
Distance Through Residential Land Use Designations	
This indicator represents the actual linear distance that the access routes pass through areas that have been designated for residential uses by municipal Official Plans. These designated areas may or may not be presently developed.	Residentially designated areas which are presently not developed represent areas of potential future development. Increased truck traffic and noise through residential areas is not desirable. Access routes which pass through few or no areas with residential designations are considered preferable.
PHYSICAL AND BIOLOGICAL ENVIRONMENT	
Crossing of Sensitive Lands	
The actual linear distance that access routes cross over hydrogeologically sensitive lands was calculated. Such crossings	The potential for contamination of surface groundwater aquifer through accidental spills of untreated wastes is

TABLE B2.3 (Cont'd)

FACTOR DEFINITION	SIGNIFICANCE
would include crossings over surface aquifers.	of concern. Access routes with few or no crossings over hydrogeologically sensitive uses (surface aquifers) were considered more desirable than routes with many or frequent crossings over hydrogeologically sensitive areas.
Stream Crossings	
A stream crossing constraint rating was developed based on the number and types of streams crossed. Permanent and intermittent streams were identified. The significance of fishery use of streams was determined in a preliminary analysis.	The potential for accidental spills of untreated wastes into watercourses is a consideration especially if there are sensitive water uses downstream. Those access routes with fewer crossings of rivers and streams, and thus a lower constraint rating, are more desirable.

B3. RANKING OF FACTORS

The process employed for the ranking of factors is described in Section 3.5.

- Table B3.1 summarizes the consultants' ranking of the site area identification factors. The major reasons for the ranking are provided in the table.
- Tables B3.2, B3.3, B3.4 and B3.5 summarizes the overall ranking of factors for factor levels 1 through 4, respectively. The tables also provides the reasons for the rankings.

More detailed descriptions of the rationale for the factor rankings are provided in the other Phase 3B site selection technical reports.

TABLE B3.1

Consultants' Ranking of Factors - Site Area Identification

(ranked from low to high constraints)[1]

	FACTORS	MAJOR REASONS FOR RANKING
LOW CONSTRAINT	Physical Resources - (Gartner Lee Associates Ltd.) ° till and lacustrine clay plain ° drumlin (Halton)	° provides second level of protection
	° poor surface drainage	° potentially mitigatible
	° moraine ° drumlin field	° strong likelihood that will fail to provide second level of protection ° difficult to confirm suitability
HIGH CONSTRAINT	° drumlin (Niagara) ° wetland ° flood plain ° stream course ° surface granular soil	° fails to provide second level of protection

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[1] Factors within same box, e.g. till and lacustrine clay plains and drumlins (Halton) ranked at same level.

TABLE B3.1 (Cont'd)

Consultants' Ranking of Factors - Site Area Identification

(ranked from low to high constraints)

	FACTORS	MAJOR REASONS FOR RANKING
LOW CONSTRAINT	Biological Resources - (Gartner Lee Associates Ltd.) • non-SEU woodlots - greater than 20 hectares	• considerable variability in suitability • limited information for decision-making
HIGH CONSTRAINT	• significant environmental units (SEUs)	• major potential natural environmental impact • potentially significant • variation in significance and level of sensitivity • a public and workshop preference
LOW CONSTRAINT	Land Use - (Marshall Macklin Monaghan Ltd./Leon Kentridge Associates Ltd.) • industrial designated and vacant • publicly owned land • rural designated	• compatible land use • potential low property impacts
	• industrial designated, serviced and vacant • industrial, designated and built upon • provincial planning area	• variation in suitability • potentially suitable • easy to confirm suitability
	• residential, designated and vacant • commercial, designated and vacant	• probably unsuitable - can be readily confirmed
HIGH CONSTRAINT	• residential, existing rural and agricultural • commercial, designated and built upon • residential, designated, serviced and vacant • residential, designated and built upon	• significant adverse social and economic impacts • public and workshop preferences

TABLE B3.1 (Cont'd)

Consultants' Ranking of Factors - Site Area Identification

(ranked from low to high constraints)

	FACTORS	MAJOR REASONS FOR RANKING
LOW CONSTRAINT	Recreation and Community Features - (Institute for Environmental Research Inc.) ° public building (non-emergency function) ° school ° conservation area ° regional park ° municipal park ° private park ° golf course ° commercial recreation facility ° community centre ° cultural centre ° museum ° fairground/exhibition ° campground ° public sports facility[1] ° private sports facility[1]	° easy to confirm suitability ° variation in suitability
HIGH CONSTRAINT	° hospital ° nursing home ° home for the aged ° institution for the disabled ° regional shopping centre ° public building (emergency function) ° special education facility ° post secondary education facility ° theme park	° includes only major facilities with large temporary or permanent populations - major conflict ° public and workshop preferences

---

[1] (includes arenas)

TABLE B3.1 (Cont'd)

Consultants' Ranking of Factors - Site Area Identification

(ranked from low to high constraints)

	FACTORS	MAJOR REASONS FOR RANKING
LOW CONSTRAINT	Agriculture (Ecologistics Ltd.) ° class 5, 6 or 7 with any use ° class 3 or 4 with non-agricultural land use	° potentially suitable
	° class 1 or 2 with non-agricultural land use ° class 3 or 4 with hay (poor quality), pasture or grazing	° potentially suitable ° progressively greater capability/productivity
	° class 4 with mixed, cereal grain, hay-grain or hay (good quality) ° class 4 with row crops, corn-wheat	° relatively less suitable
	° class 1 or 2 with hay (poor quality) pasture or grazing	° as above
	° class 3 with mixed, cereal grain, hay-grain or hay (good quality)	° as above
	° class 3 with row crops or corn-wheat	° as above
	° class 1 or 2 with mixed, cereal grain, hay-grain or hay (good quality) ° class 1 or 2 with row crops or corn-wheat	° as above
	° existing specialty crops	° most unsuitable ° public and workshop preference
	Transportation (M.M. Dillon Ltd.) ° airports (Transport Canada licensed)	° major adverse impact ° air safety concerns
HIGH CONSTRAINT	Indian Reserve (OWMC)	° outside Provincial jurisdiction ° major adverse impact

TABLE B3.2

Overall Ranking of Factors - Level 1 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 1)	° till and lacustrine clay plain	° provides second level of protection
	° drumlin (Halton)	° provides second level of protection
	° publicly owned land	° minimizes private property impacts ° public and workshop preference
	° industrial designated and vacant	° compatible land use ° public and workshop preference
	° rural designated	° potentially suitable ° tendency to be removed from populated areas ° rural land use category - least suitable for agriculture

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[1] Factors within same box, e.g. publicly owned land, rural designated ranked at same level.

Table B3.3

Overall Ranking of Factors - Level 2 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 2)	• poor surface drainage	• potentially mitigatible effects
	• industrial, designated, serviced and vacant	• potentially suitable • can be readily confirmed
	• provincial planning area	• potentially suitable • variability within factor
	• industrial, designated and built upon	• potentially suitable • can be readily confirmed
	• public building (non-emergency function)	• considerable variability within factor in potential suitability • insufficient base for decision-making
	• school	• considerable variability within factor in potential suitability • insufficient base for decision-making
	• conservation area	• considerable variability within factor in potential suitability • insufficient base for decision-making
	• municipal, regional and private parks	• considerable variability within factor in potential suitability • insufficient base for decision-making

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[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 2.

Table B3.3 (Cont'd)

Overall Ranking of Factors - Level 2 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 2)	° golf course	° considerable variability within factor in potential suitability ° insufficient base for decision-making ° easy to confirm suitability
	° commercial recreation facility	° considerable variability within factor in potential suitability ° insufficient base for decision-making
	° community centre	° considerable variability within factor in potential suitability ° insufficient base for decision-making
	° cultural centre	° considerable variability within factor in potential suitability ° insufficient base for decision-making
	° museum	° considerable variability within factor in potential suitability ° insufficient base for decision-making
	° fairground/exhibition	° considerable variability in within factor in potential suitability ° insufficient base for decision-making
	° campground	° considerable variability within factor in potential suitability ° insufficient base for decision-making ° ease to confirm suitability

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[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 2.

Table B3.3 (Cont'd)

Overall Ranking of Factors - Level 2 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 2)	° public sports facility	° considerable variability within factor in potential suitability ° insufficient base for decision-making
	° private sports facility	° considerable variability within factor in potential suitability ° insufficient base for decision-making
	° non-SEU woodlots greater than 20 hectares	° insufficient information base for decision-making
	° class 5, 6 or 7 with any use	° potentially suitable
	° class 3 or 4 with non-agricultural land use	° potentially suitable ° facilitates maintenance of choice

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[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 2.

Table B3.4

Overall Ranking of Factors - Level 3 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 3)	° significant environmental units	° variability within factor and in potential suitability ° public concern ° potential adverse impact
	° class 1 or 2 with non-agricultural land use	° may be desirable to retain selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources
	° class 3 or 4 with hay (poor quality), pasture or grazing	° may be desirable to retain n selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources
	° class 4 with mixed, cereal grain, hay-grain or hay (good quality)	° may be desirable to retain selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources

---

[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 3.

Table B3.4 (Cont'd)

Overall Ranking of Factors - Level 3 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 3)	° class 4 with row crops, corn-wheat	° may be desirable to retain selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources
	° class 1 or 2 hay (poor quality), pasture or grazing	° may be desirable to retain selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources
	° class 3 with mixed, cereal grain, hay-grain or hay (good quality)	° may be desirable to retain selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources
	° class 3 with row crops or corn-wheat	° may be desirable to retain selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources

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[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 3.

Table B3.4 (Cont'd)

Overall Ranking of Factors - Level 3 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 3)	° class 1 or 2 with mixed, cereal grain, hay-grain or hay (good quality)	° may be desirable to retain selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources
	° class 1 or 2 with row crops or corn-wheat	° may be desirable to retain selected factors to maintain a diversity of choice with respect to major tradeoffs and factors to be considered in subsequent stages ° potential adverse impacts on agricultural resources

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[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 3.

Table B3.5

Overall Ranking of Factors - Level 4 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 4)	° existing specialty crops	° major adverse impact on agricultural resources ° major public concern
	° moraine	° fails to provide second level of protection and low likelihood of suitability; detailed site investigations, e.g. drilling, not warranted to confirm suitability
	° drumlin field	° fails to provide second level of protection and low likelihood of suitability; detailed site investigations, e.g. drilling, not warranted to confirm suitability
	° drumlin (Niagara)	° fails to provide second level of protection and low likelihood of suitability; detailed site investigations, e.g. drilling, not warranted to confirm suitability
	° wetland	° fails to provide second level of protection and low likelihood of suitability; detailed site investigations, e.g. drilling, not warranted to confirm suitability

[1] Factor groupings within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 4.

Table B3.5 (Cont'd)

Overall Ranking of Factors - Level 4 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 4)	• flood plain	• fails to provide second level of protection and low likelihood of suitability; detailed site investigations, e.g. drilling, not warranted to confirm suitability
	• stream course	• fails to provide second level of protection and low likelihood of suitability; detailed site investigations, e.g. drilling, not warranted to confirm suitability
	• surface granular soil	• fails to provide second level of protection and low likelihood of suitability; detailed site investigations, e.g. drilling, not warranted to confirm suitability
	• residential, designated and vacant	• major potential impact in the event of displacement or proximity • relatively large number of people
	• residential, existing rural and agricultural	• major potential impact in the event of displacement or proximity • relatively large number of people
	• commerical, designated and vacant	• major potential impact in the event of displacement or proximity • relatively large number of people

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[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 4.

Table B3.5 (Cont'd)

Overall Ranking of Factors - Level 4 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 4)	° commercial, designated and built upon	° major potential impact in the event of displacement or proximity ° relatively large number of people
	° residential, designated and built upon	° major potential impact in the event of displacement or proximity ° relatively large number of people
	° residential, designated and serviced	° major potential impact in the event of displacement or proximity ° relatively large number of people
	° Indian Reserve	° outside jurisdiction of Province ° major potential impact in the event of displacement or proximity ° relatively large number of people
	° hospital	° major potential impacts ° relatively large number of people (second level of protection)
	° nursing home	° major potential impacts ° relatively large number of people (second level of protection)

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[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 4.

Table B3.5 (Cont'd)

Overall Ranking of Factors - Level 4 - Site Area Identification[1]

	FACTORS	REASONS FOR RANKING/COMMENTS
(Level 4)	° home for the aged	° major potential impacts ° relatively large number of people (second level of protection)
	° institution for the disabled	° major potential impacts ° relatively large number of people (second level of protection)
	° regional shopping centre	° major potential impacts ° relatively large number of people (second level of protection)
	° public building (emergency function)	° major potential impacts ° relatively large number of people (second level of protection)
	° special education facility	° major potential impacts ° relatively large number of people (second level of protection)
	° post-secondary education facility	° major potential impacts ° relatively large number of people (second level of protection)
	° theme park	° major potential impacts ° relatively large number of people (second level of protection)
	° major airport (Transport Canada licensed)	° major adverse impact ° air safety concern

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[1] Factors within same box, e.g. poor surface drainage and non-SEU woodlots ranked at same level, e.g. Level 4.

B4.0 ROLE OF PUBLIC CONSULTATION PROGRAM IN FACTOR IDENTIFICATION, RATING AND APPLICATION

Table B4.1 highlights the major site selection issues raised through OWMC's public consultation program. The listing of issues is based on a review of public meeting notes and submissions.

Four public workshops were also held during Phase 3B. The first three workshops were held in the fall (October and November) of 1983 and the final workshop was held in January of 1984.

The role of the fall workshops is summarized in text form in this Appendix. In addition, Table B4.2 summarizes:

- how the site area identification factors were treated (e.g. exclusionary or non-exclusionary);
- the workshop preferences regarding factor treatment; and
- comments with respect to the differences.

The role of the January workshop is also summarized in text form in this Appendix. In addition, Table B4.3 summarizes:

- the six site selection issues raised at the workshop;
- the preliminary OWMC position taken at the workshop;
- the reasons for OWMC's position;
- the responses of the workshop participants;
- the conclusion reached by OWMC as a result of the input received.

More detailed descriptions of the materials provided and the responses received at the workshop are provided in the OWMC public consultation reports (listed in Appendix A). Further consultant comments are also provided in the other 3B site selection technical reports.

TABLE B4.1

General Site Selection Issues Raised Through OWMC Public Consultation Program

- the importance of minimizing transportation risk;
- a preference for the establishment of the facilities at or near the sources of special wastes;
- the need to minimize the potential for ground water contamination;
- the need to preserve agricultural land, especially prime agricultural lands and specialty crop lands;
- the need to consider compatibility with local land use plans;
- a general concern with the protection of human health;
- the potential for surface water contamination;
- the potential impacts on the agricultural community;
- the protection of wildlife and environmentally significant areas;
- concern with potential effects on land values;
- the need to maintain environmental and human health factors as the most important criteria in the selection of candidate areas and sites;

TABLE B4.1 (Cont'd)

- potential social and community impacts;
- potential impacts resulting from traffic hazards, noise and odours;
- the potential for stress and the disruption of community activities;
- potential land use conflicts;
- costs, especially land costs, as a secondary siting consideration;
- the unique nature of each community and the community's ability to cope with the OWMC facilities;
- land ownership but not where a compromise of environmental criteria would take place;
- the importance of considering potential impacts on community character and lifestyle.

Public Workshop Preferences - Fall 1983 Workshops

One set of inputs into the treatment of the site area identification factors was a series of three site selection workshops held in October and November of 1983. Participants in the workshops were asked to review a somewhat simplified list of the site area identification factors. They were asked to comment on whether the factors represented major, moderate, or minor constraints or an opportunity for siting each of three facility components.

The positions taken by the workshop participants with regard to the treatment of each factor, the ways in which the factors were treated by OWMC, and the reasons for the differences in positions taken between OWMC and the workshop participants are highlighted in Table B4.2 in Appendix B.[1]

In addition to the inputs received regarding specific factors, a number of general themes and concerns emerged through the course of the workshops of particular relevance to the site area identification process including:

- the importance of avoiding high quality productive agricultural lands especially specialty crop lands;
- a preference for the establishment of the facility components in locations as close to the sources of waste as possible;
- the importance of minimizing risk to human health;
- the desirability of industrial sites;

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[1] The format and input received at these workshops is described in greater detail in the OWMC Report - OWMC Phase 3 Public Consultation Report Volume 1 March, 1984.

- the importance of deep consistent silt-clay soils;
- the need to consider carefully the differences in siting requirements among the three facility components;
- the importance of keeping the facility components well removed from population concentrations and community facilities;
- the importance of explicitly linking facility characteristics, the choices of technologies, and reduction/recycling procedures and options to the site selection process;
- the importance of considering transportation risk;
- the importance of avoiding flood-prone lands and significant natural environmental areas;
- the desirability of locating on publicly owned lands;
- the need to preserve stable agricultural areas.

Other exclusionary factors suggested by workshop participants included:

- Indian reserves
- heritage areas
- estate/residential areas
- airports
- health facilities/hospitals
- air currents

The general and specific inputs received from the workshops (as well as the other public consultation activities of OWMC) served the following purposes:

- They led to a review of the site identification factors and the treatment of those factors by OWMC and its consultants. In the case of the agricultural factors, greater weight was, for example, placed on agricultural capability relative to agricultural uses;

- They reinforced the need to consider such matters as transportation risk, the stability of agricultural communities, air dispersion/quality and the desirability of industrial/publicly held sites in diversity of choice considerations;

- They reinforced the importance of maintaining a second level of environmental protection;

- They reinforced the importance of explicit links between facility characteristics and potential environmental impacts.

- Where it was not possible to address the concerns and considerations raised in the workshops through the site area identification process led to their incorporation into subsequent site selection stages.

TABLE B4.2

Fall Workshop Preferences

Treatment of Site Area Identification Factors

FACTORS[1]	TREATMENT	WORKSHOP PREFERENCES[2]	COMMENTS REGARDING DIFFERENCES
Physical Resources			
° surface granular soils	° exclusionary LF & PI	° exclusionary; non-exclusionary incinerator	fails to provide second level of protection
° stream course	° exclusionary LF & PI	° exclusionary	no difference
° flood plain	° exclusionary LF & PI	° exclusionary	no difference
° wetland	° exclusionary LF & PI	° exclusionary	no difference
° drumlins (Niagara)	° exclusionary LF & PI	° exclusionary; opinion divided on incinerator	fails to provide second level of protection
° drumlin field	° exclusionary LF & PI	° exclusionary; opinion divided on incinerator	fails to provide second level of protection
° moraine	° exclusionary LF & PI	° exclusionary; opinion divided on incinerator	fails to provide second level of protection
Land Use:			
° residential built-up	° exclusionary LF & PI	° exclusionary	no difference
° residential, designated and serviced	° exclusionary LF & PI	° exclusionary	no difference

[1] For ease of understanding, the factors used at the October and November 1983 workshops were less detailed than those used in site area identification.

[2] Workshop Preferences - a factor was considered non-exclusionary (in terms of workshop preferences) if it was rated by workshop participants as either an opportunity or a minor constraint.

TABLE B4.2 (Cont'd)

FACTORS	TREATMENT	WORKSHOP PREFERENCES	COMMENTS REGARDING DIFFERENCES
° commercial, designated and built-upon	° exclusionary LF & PI	° not addressed	
° commercial, designated and vacant	° exclusionary LF & PI	° not addressed	
° residential, existing, rural and agricultural	° exclusionary LF & PI	° exclusionary	no difference
° residential, designated and vacant	° exclusionary LF & PI	° exclusionary	no difference
Indian reserves	° exclusionary	° not addressed	
Recreation and Community Features			
° hospitals	° exclusionary LF & PI	° exclusionary	no difference
° nursing homes	° exclusionary LF & PI	° exclusionary	no difference
° homes for the aged	° exclusionary LF & PI	° exclusionary	no difference
° institutions for the disabled	° exclusionary LF & PI	° exclusionary	no difference
° regional shopping centres	° exclusionary	° exclusionary	no difference
° public buildings (emergency funcion)	° exclusionary LF & PI	° exclusionary	no difference

TABLE B4.2 (Cont'd)

FACTORS	TREATMENT	WORKSHOP PREFERENCES	COMMENTS REGARDING DIFFERENCES
° special educational facilities	° exclusionary LF & PI	° exclusionary	no difference
° post secondary education facilities	° exclusionary LF & PI	° exclusionary	no difference
° theme parks	° exclusionary LF & PI	° exclusionary	no difference
Agriculture			
° existing specialty crops	° exclusionary LF & PI	° exclusionary	no difference
° class 1 or 2[1] row crops or corn-wheat	° exclusionary LF & PI	° exclusionary	no difference
° class 1 or 2[1] mixed and/or cereal grain, hay-grain or hay (good quality)	° exclusionary LF & PI	° exclusionary	no difference

[1] To simplify the workshop process in the last two workshops only the suitability of specialty crops and agricultural land capability classes were reviewed. This modification also reflected the emphasis placed by many of the participants in the first workshop on capability over use.

TABLE B4.2 (Cont'd)

FACTORS	TREATMENT	WORKSHOP PREFERENCES	COMMENTS REGARDING DIFFERENCES
° class 3[1] row crops or corn-wheat	° exclusionary LF & PI	° exclusionary	no difference
° class 3[1] mixed and/or cereal grain, hay-grain or hay (good quality)	° exclusionary PI only	° exclusionary; minor constraint for incinerator; more participants ranked classes 3 and 4 as moderate than for classes 1 or 2	relatively less suitable; necessary to maintain diversity of choice
° class 1[1] or 2[1], hay (poor quality) pasture or grazing	° exclusionary PI only	° exclusionary; opinion divided between major and moderate constraints for PI	relatively less suitable; necessary to maintain diversity of choice
° class 4[1], row crops or corn-wheat	° exclusionary PI only	° exclusionary; opinion divided between major and moderate constraint	relatively less suitable; necessary to maintain diversity of choice
° class 4[1], mixed and/or cereal grain, hay-grain or hay (good quality)	° exclusionary PI only	° exclusionary; minor constraint for incinerator; more participants ranked classes 3 and 4 as moderate than for classes 1 or 2	relatively less suitable; necessary to maintain diversity of choice

[1] Only capability and specialty crops considered in the last 2 workshops.

TABLE B4.2 (Cont'd)

FACTORS	TREATMENT	WORKSHOP PREFERENCES	COMMENTS REGARDING DIFFERENCES
Physical Resources			
° till and lacustrine clay plain	° non-exclusionary LF & PI	° non-exclusionary	no difference
° drumlin (Halton)	° non-exclusionary LF & PI	° exclusionary	distinction in drumlin types not presented; no differences between drumlins (Halton) and till and lacustrine clay plain
° poor surface drainage	° non-exclusionary LF & PI	° exclusionary	constraints possible to overcome through mitigation; requires further consideration before suitability confirmed
Biological Resources			
° SEUs	° non-exclusionary LF & PI	° exclusionary	not possible to generalize across class
° non-SEU woodlots greater than 20 ha	° non-exclusionary LF & PI	° exclusionary	inadequate information for decision-making
Land Use			
° industrially designated and vacant	° non-exclusionary LF & PI	° non-exclusionary	no difference
° rural designated	° non-exclusionary LF & PI	° exclusionary	variability in significance and suitability

TABLE B4.2 (Cont'd)

FACTORS	TREATMENT	WORKSHOP PREFERENCES	COMMENTS REGARDING DIFFERENCES
° industrial designated and serviced	° non-exclusionary LF & PI	° non-exclusionary	no difference
° residual, regional official plan	° non-exclusionary LF & PI	° non-exclusionary	considerable variation in significance and sensitivity
° industrial designated and built-upon	° non-exclusionary LF & PI	° non-exclusionary; exclusionary for landfill	retained for landfill as easy to confirm
° publicly owned land	° non-exclusionary LF & PI	° non-exclusionary	no difference
Recreation and Community Features			
° public buildings (non-emergency function)	° non-exclusionary LF & PI		variability in significance can be readily checked
° schools	° non-exclusionary LF & PI		variability in significance can be readily checked
° conservation areas	° non-exclusionary LF & PI	° exclusionary	variability in significance; can be readily checked
° public, regional and private parks	° non-exclusionary LF & PI	° exclusionary	variability in significance and sensitivity; can be readily checked

TABLE B4.2 (Cont'd)

FACTORS	TREATMENT	WORKSHOP PREFERENCES	COMMENTS REGARDING DIFFERENCES
° golf courses	° non-exclusionary LF & PI	° non-exclusionary group 1, exclusionary groups 2 & 3; exclusionary for landfill not considered	variability in significance and sensitivity; can be readily checked
° commercial recreation facilities	° non-exclusionary LF & PI	° exclusionary	variability in significance and sensitivity; can be readily checked
° community centres	° non-exclusionary LF & PI	° exclusionary	variability in significance and sensitivity; can be readily checked
° cultural centres	° non-exclusionary LF & PI	° exclusionary	variability in significance and sensitivity; can be readily checked
° museums	° non-exclusionary LF & PI	° exclusionary	variability in significance; can be readily checked
° fairgrounds/ exhibitions			
° campgrounds	° non-exclusionary LF & PI	° exclusionary	variability in significance can be readily checked
° public sports facilities	° non-exclusionary LF & PI	° exclusionary	variability in significance and sensitivity; can be readily checked

TABLE B4.2 (Cont'd)

FACTORS	TREATMENT	WORKSHOP PREFERENCES	COMMENTS REGARDING DIFFERENCES
° private sports facilities	° non-exclusionary LF & PI	° exclusionary	variability in significance and sensitivity; can be readily checked
Agriculture ° class 5, 6 or 7	° non-exclusionary LF & PI	° non-exclusionary	no difference
° class 3 or 4[1] in non-agri cultural use	° non-exclusionary LF & PI	° non-exclusionary	no difference
° class 1 or 2[1] in non-agricultural use	° non-exclusionary LF & PI	° exclusionary; opinion divided major or moderate constraint	relatively less suitable; necessary to maintain diversity of choice
° class 3 or 4[2] hay (poor quality), pasture or grazing	° non-exclusionary LF & PI	° exclusionary; opinion divided major or moderate constraint for PI	relatively less suitable - necessary to maintain diversity of choice
Transportation ° airport	° exclusionary LF & PI	° not addressed	

[1] Only addressed by group 1.

[2] Only capability and specialty crops considered in the last 2 workshops.

Public Workshop Preferences - January 1984 Workshops

A further input to the site area identification stage (as well as to subsequent site selection stages) was an additional site selection workshop held in January 1984. The results of this workshop are highlighted in the OWMC Phase 3 Report (1984a and b) and are detailed in the OWMC report - Report on OWMC Site Selection Workshop Hamilton, Ontario, January 6-7, 1984 (1984c).

All the participants in the fall workshops were invited to the January workshop as well as additional representatives who expressed interest in OWMC's activities.

In the January workshop participants were presented with a series of site selection issues. The participants were asked to react to each of the issues as well as to the preliminary OWMC position regarding each issue. Table B4.3 in Appendix B highlights the issues, the preliminary OWMC positions with respect to each issue, the reasons for the OWMC position, the responses of the workshop participants to each issue, and the conclusions reached as a result of group discussions.

The implications of the workshop discussions with respect to the diversity of choice issues were as follows:

- retain siting opportunities which minimize transportation haulage and/or maximize the depth and consistency of silt-clay soils;
- retain siting options in both urban fringe and rural locations;
- place particular emphasis on industrial locations;
- build in consideration of the stability of the agricultural community;

- retain siting opportunities in urban shadow areas (with relatively higher agricultural capability/productivity) and retain rural areas outside of urban shadow (with relatively lower agricultural capability/productivity);
- maximize opportunities for siting on deep consistent silt-clay soils;
- focus on the need to minimize agricultural impacts;
- maximize opportunities for minimizing transportation risk.

Other site selection related issues which were raised at the January workshop included:

- the importance of buffer zones between the facility components and residential, recreational and other sensitive uses;
- the consideration of operational costs but not at the price of safety;
- the need to carefully examine social impacts;
- the need to consider air quality and dispersion;
- the need to maintain an open site selection process;
- the central importance of human health considerations.

TABLE B4.3

January Workshop Preferences

Site Selection Issues

ISSUES	PRELIMINARY OWMC POSITION	REASONS FOR POSITION	RESPONSES OF PARTICIPANTS	CONCLUSION
1 Local areas of potential environmental significance or poor agricultural land (low intensity production)	° First choice - if possible avoid both ° Second choice- if not possible prefer sites for facility component siting within local areas of potential environmental significance	° Highest capability/ productive lands already avoided ° Areas of provincial or regional environmental significance will be avoided (in screening stage) ° On and off site (surrounding holdings, farms, access roads) agricultural impact lessened ° In most cases, loss of food production potential would result in a greater economic impact than loss of woodlot production or potential	Generally supported OWMC position	Consider further in comparative evaluation of sites

TABLE B4.3 (Cont'd)

ISSUES	PRELIMINARY OWMC POSITION	REASONS FOR POSITION	RESPONSES OF PARTICIPANTS	CONCLUSION
		° Possible to preserve portions of environmental features within buffer area or facility; more difficult to maintain economically viable farm operations if portions of farm taken		
2 Transportation haulage distance versus depth of clay	° First choice-prefer sites which have short haul distance and deepest clay soil	° Clay soils with inadequate depths and consistency already avoided	Majority favoured deeper clay soils: however, opinion divided	Retain siting opportunities which favour both sides of trade-off
	° Second choice-if not possible, prefer sites for facility components with shorter haul distance and shallower clay soils	° If detailed investigations reveal that potential sites have inadequate soils these sites will be dropped from consideration		

TABLE B4.3 (Cont'd)

ISSUES	PRELIMINARY OWMC POSITION	REASONS FOR POSITION	RESPONSES OF PARTICIPANTS	CONCLUSION
		° Long haul distances increases transportation risks, impacts and costs		
3 Urban fringe versus rural development	° First choice- If possible prefer sites for facility components with no agricultural impacts and remote from populated areas and sensitive community and recreation features ° Second choice- If not possible prefer sites for facility components in urban fringe if they are: - in industrial areas well removed from residential areas and community and recreation features ° Third choice- If no suitable industrial	° Maximizes land use compatibility ° Minimizes off site risks and impacts (noise, visual) ° Highest capability/ productivity agricultural lands already preserved	Generally supported OWMC position but qualified: - importance of separation from residential and commercial areas - primary suitability of industrial areas, especially for PIs - requirement that only rural areas be considered for the landfill Consideration of both agricultural capability/ productivity and stability of agricultural community	Ensure both rural and urban fringe sites Focus on industrial areas Particular attention to separation distance from sensitive uses Need to consider stability of agricultural community

TABLE B4.3 (Cont'd)

ISSUES	PRELIMINARY OWMC POSITION	REASONS FOR POSITION	RESPONSES OF PARTICIPANTS	CONCLUSION
	sites are available then prefer sites with minimal agricultural impacts			
4 Agricultural capability/ productivity versus urban shadow area	° First choice- If possible avoid sites capable of agricultural use irrespective of location. ° Second choice- If not possible prefer sites for facility components in urban shadow even if high agricultural capability land must be used	° Less loss to long term agricultural production ° Less economic impact to farm operations (capital investments) ° Sites in urban shadow which are in very close proximity to residential populations will be avoided ° Sites in urban shadow with long term potential for agriculture will be avoided	Opinion divided	Retain both urban shadow sites and sites with lower agricultural capability outside urban shadow

TABLE B4.3 (Cont'd)

ISSUES	PRELIMINARY OWMC POSITION	REASONS FOR POSITION	RESPONSES OF PARTICIPANTS	CONCLUSION
		° Fewer off-site transportation impacts likely in urban shadow areas (proximity to major roads)		
5 Depth of clay soils versus agricultural capability/ productivity	° First choice- if possible sites with deep consistent clay soils and no agricultural impacts ° Second choice- If not possible prefer sites with deeper more consistent clay soils	° Highest capability/ productivity agricultural lands already avoided ° Minimizes risk to the environment ° Every step taken to minimize agricultural impacts	Generally supported OWMC position	Maximize opportunities for siting on deep consistent clay soils Importance of minimizing agricultural impacts
6 Transportation access versus agricultural capability/ productivity	° First choice- If possible sites with short haul distance and no agricultural impacts ° Second choice- If not	° Highest capability/ productivity agricultural lands already avoided ° Minimizes risk to the environment	Generally supported OWMC position	Importance of minimizing transportation risks Importance of minimizing

TABLE B4.3 (Cont'd)

ISSUES	PRELIMINARY OWMC POSITION	REASONS FOR POSITION	RESPONSES OF PARTICIPANTS	CONCLUSION
	possible prefer sites with short haul distance	° Long haul distances increase transportation risks, impacts and costs ° Every step taken to minimize agricultural impacts		agricultural impacts

B5. APPLICATION OF FACTORS - MAINTENANCE OF CHOICE - TRANSPORTATION AND HYDROGEOLOGY

As identified in Table B1.2, in order to address the question of maintaining a diversity of siting choices it was necessary to classify different portions of the candidate areas in terms of relative differences with respect to transportation access. Towards that end a ranking system was developed based on a combination of two indices-tonne kilometres of waste haulage (as expressed by a transportation cost index) and transportation accident probability (as expressed by a transportation accident probability index).

- Table B5.1 identifies the two transportation indices - tonne kilometres of waste hauled and transportation accident probability index - employed to determine which location or areas had relatively better transportation access.

- Table B5.2 identifies the transportation cost indices for a series of receiver site cluster centroids scattered across the candidate area. The table also indicates the relative percentage differences among the centroids.

- Table B5.3 identifies the accident probability indices for the same series of receiver site cluster centroids. Table B5.2 also indicates relative percentage differences among the centroids.

- Table B5.4 combines the two previously noted indices into a series of composite haulage and accident probability indices. Again, percentage differences are provided. In addition, the centroids are ranked into four levels.

A more detailed description of the methodology employed is summarized in Site Selection Process Phase 3B: Selection of Candidate Sites - Transportation (1984c) prepared by M.M. Dillon Limited.

Once an area was identified on the Niagara Peninsula which appeared to possess both relatively good access and suitable silt-clay soil, an analysis was undertaken comparing the relative advantages and disadvantages associated with six access routes into the area.

- Table B5.5 identifies the six routes and highlights their transportation conditions and limitations.
- Table B5.6 summarizes the major differences among the six routes. The input to the table was provided by the other site selection consultants.

TABLE B5.1

Factors Used in Rating Candidate Areas for Relative Transportation Access

Factor Definition	Significance
Tonne Kilometres of Waste Hauled	
Assuming road transport of special wastes by trucks, the distance travelled and total annual loadings from source sites to alternative receiver sites provides an indicator of transportation system efficiency and transport cost. The measurement used is tonne kilometres.	The tonne kilometre value obtained for each sites a surrogate for transport haulage cost. Each site is indicative of a region or portion of the candidate areas. Those sites or regions which exhibit lower tonne kilometre values are more desirable than sites with higher values.
Transportation Accident Probability Index	
The combination of tonne kilometres of waste hauled from waste source sites with the average annual accident rate by road classification produces a value which can be compared between sites to produce an index of relative accident probability.	The transportation accident probability index is a surrogate value for accident risk. Those access routings with a lower accident probability index are more desirable from a transportation perspective than those routings which exhibit a higher accident probability index.

TABLE B5.2

Transportation Cost Indices - Receiver Site Cluster Centroids [1]

Receiver Site Cluster Centroids	Transportation Cost Indices
Mississauga/Brampton	1.00
Milton	1.08
Bramalea	1.09
Binbrook #2	1.16
Carluke	1.20
Empire Corners	1.22
Binbrook #1	1.22
Caledonia	1.26
Caistor Centre	1.28
Winslow	1.32
Elcho	1.34
Bismarck	1.34
Boyle	1.39
Chambers Corners	1.46
Wainfleet	1.47
Welland	1.49
Niagara Falls	1.55

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[1] Receiver site cluster centroids are locations within a candidate area whose transportation access is representative of the site areas which may be located in their vicinity.

TABLE B5.3

Accident Probability Indices - Receiver Site Cluster Centroids[1]

Receiver Site Cluster Centroids	Accident Probability Index
Mississauga/Brampton	1.00
Bramalea	1.09
Milton	1.09
Binbrook #2	1.31
Caledonia	1.31
Empire Corners	1.38
Binbrook #1	1.39
Carluke	1.45
Welland	1.45
Niagara Falls	1.46
Bismarck	1.53
Boyle	1.66
Caistor Centre	1.69
Winslow	1.70
Elcho	1.93
Wainfleet	1.96
Chambers Corners	1.98

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[1] Receiver site cluster centroids are locations within a candidate area whose transportation access is representative of the site areas which may be located in their vicinity.

TABLE B5.4

Composite Haulage and Accident Probability Indices - Receiver Site Cluster Centroids[1]

Receiver Site Cluster Centroids	Tonne-Kilometre Hauling Distance Composite Index	Candidate Area Ranking Group
Mississauga/Brampton	1.00	Best
Milton	1.09	Best
Bramalea	1.09	Best
Binbrook #2	1.24	Good
Caledonia	1.29	Good
Empire Corners	1.30	Good
Binbrook #1	1.30	Good
Carluke	1.33	Good
Bismarck	1.44	Moderate
Welland	1.47	Moderate
Caistor Centre	1.49	Moderate
Winslow	1.51	Moderate
Niagara Falls	1.51	Moderate
Boyle	1.53	Moderate
Elcho	1.64	Low
Wainfleet	1.72	Low
Chambers Corners	1.72	Low

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[1] Receiver site cluster centroids are locations within a candidate area whose transportation access is representative of the site areas which may be located in their vicinity.

TABLE B5.5

Niagara Escarpment Access Routes
- Highway 20 to Niagara Regional Road 24

Route	Conditions and/or Limitations
Highway 20 Hamilton	- good condition - provides a connection with Q.E.W and good penetration to the south via Highways 20 and 56.
New Mountain Road (Regional Road) Hamilton/Stoney Creek	- road is discontinuous, ending at Ridge Road on the south and connecting with King Street (Regional Road) on the north - a jog to the east or west is then required to access the Q.E.W - road is judged to be unacceptable
Dewitt Road Stoney Creek	- a local municipal road with one-way operation and no direct connection to Q.E.W. - road unsuitable for transport use.
McNeilly Road Stoney Creek	- a local municipal road deemed unsuitable for tractor trailer combinations - no Q.E.W. interchange
Hamilton-Wentworth Route #450 (Regional Road) Hamilton/Stoney Creek	- designated truck route but unacceptable for tractor trailer combinations - road surface inferior - connection exists with Q.E.W. but route ends at Hamilton-Wentworth route 411 (Regional Road)
Niagara Region Road 12 Mountain Street Grimsby	- conditions acceptable - connects to Q.E.W. - route ends at Highway 20 and requires a lateral shift to east or west to penetrate the southern areas of the peninsula

TABLE B5.5 (Cont'd)

Route	Conditions and/or Limitations
Niagara Region Road 14/714 Park Road Grimsby	- conditions acceptable - involves a short jog along Niagara Region Road 81 to access Bartlett Avenue which connects to Q.E.W. - route ends at Niagara Region Road 73 and involves a jog to Trinity Road (Niagara Region Road 14) to access the interior of the peninsula
Niagara Region Road 18 Mountain Street/Ontario Lincoln	- conditions acceptable - connects to Q.E.W.
Merritt Road Lincoln	- not inspected, as route is of a local nature and does not provide an interchange with the Q.E.W. - route terminates at Niagara Region Road 81 - does not penetrate areas to the south
Niagara Region Road 24 Victoria Avenue Lincoln	- good conditions and horizontal alignment - no prohibitions noted - connects with Q.E.W.

TABLE B5.6

Access Route Analysis - Western Portion of Candidate Area 18

ROUTE	Proximity to Freeway distance by road type to QEW (km)	Accident Frequency by road type from QEW (accidents/millions vehicles)	Distance Through Built-Up/Urban Area (m)	Number of Communities by Population # and size of population concentrations	Number of Residences rural and farm residences (approx.)	Number of Active Farm Complexes (approx.)	Existing Community and Recreational Facilities	Distance Through Residential Land Use Designations (m)	Crossing of Sensitive Lands distance across sensitive hydrogeologic conditions (m)	Stream Crossings watercourse constraints rating	COMMENTS
1. - south on Highway 20 to Woodburn Road - south on Woodburn Road to Hamilton-Wentworth Regional Road 622 - west on Hamilton-Wentworth Regional Road 622	Kings Highways: 12.2 Regional Roads: 8.3 TOTAL: 20.5	Kings Highways: 14.64 Regional Roads: 35.61 TOTAL: 50.25	7,500	Stoney Creek: 37,481 Woodburn: 245	205	22	Churches: 3 Schools: 3 Parks: 0 Other: 7 TOTAL: 13	8,670	1,860	moderate	- route passes through a sub-regional centre (Highways 8 & 20), as identified in the Hamilton-Wentworth Regional Official Plan - route passes 1 high-rise apartment complex, 3 low-rise apartment complexes, 1 townhouse complex and approximately 64 residences in Stoney Creek
2. - south on Highway 20 to Woodburn Road - south on Woodburn Road to Hamilton-Wentworth Regional Road 622 - east on Hamilton-Wentworth Road 622 to Niagara Regional Road 65 - east on Niagara Regional Road 65	Kings Highways: 12.2 Regional Roads: 16.0 TOTAL: 28.2	Kings Highways: 14.64 Regional Roads: 68.64 TOTAL: 83.28	7,500	Stoney Creek: 37,481 Woodburn: 245	286	35	Churches: 4 Schools: 3 Parks: 0 Other: 11 TOTAL: 18	9,220	1,860	moderate	- route passes through a sub-regional centre (Highways 8 & 20), as identified in the Hamilton-Wentworth Regional Official Plan - route passes 1 high-rise apartment complex, 3 low-rise apartment complexes, 1 townhouse complex and approximately 64 residences in Stoney Creek
3. - south on Niagara Regional Road 12 to Highway 20 - east on Highway 20 to Niagara Regional Road 14 - south on Niagara Regional Road 14	Kings Highways: 5.8 Regional Roads: 18.3 TOTAL: 24.1	Kings Highways: 6.96 Regional Roads: 78.51 TOTAL: 85.47	3,950	Grimsby: 16,000 Smithville: 2,000	176	39	Churches: 10 Schools: 5 Parks: 2 Other: 5 TOTAL: 22	5,350	3,775	major	- route passes 300 m designated commercial in Smithville - route passes approximately 49 residences in Grimsby and approximately 70 residences in Smithville
4. - south on Bartlett Ave. to Niagara Regional Road 81 - west on Niagara Regional Road 81 to Niagara Regional Road 714 - south on Niagara Regional Road 714 to Niagara Regional Road 73 - east on Niagara Regional Road 73 to Niagara Regional Road 14 - south on Niagara Regional Road 14 to Highway 20 - east on Highway 20 to Niagara Regional Road 14 - south on Niagara Regional Road 14 to Niagara Regional Road 16 - south on Niagara Regional Road 16	Kings Highways: 1.5 Regional Roads: 19.7 TOTAL: 21.2	Kings Highways: 1.80 Regional Roads: 84.51 TOTAL: 86.31	4,000	Grimsby: 16,000 Smithville: 2,000	89	35	Churches: 5 Schools: 2 Parks: 1 Other: 7 TOTAL: 15	4,300	3,165	moderate	- route passes 300 m designated commercial in Smithville - route passes approximately 30 residences in Grimsby and approximately 6 residences in Smithville
5. - south on Niagara Regional Road 18 to Niagara Regional Road 69 - west on Niagara Regional Road 69 to Highway 20 - south on Highway 20	Kings Highways: 4.9 Regional Roads: 14.3 TOTAL: 19.2	Kings Highways: 5.88 Regional Roads: 61.35 TOTAL: 67.23	1,950	Beamsville 5,000 St. Anns: 75	99	26	Churches: 3 Schools: 0 Parks: 2 Other: 0 TOTAL: 5	4,600	2,930	moderate	
6. - south on Niagara Regional Road 24 to Highway 20 - west on Highway 20	Kings Highways: 9.3 Regional Roads: 15.9 TOTAL: 25.2	Kings Highways: 11.16 Regional Roads: 68.21 TOTAL: 79.37	3,050	Vineland: 1,150	123	48	Churches: 4 Schools: 2 Parks: 3 Other: 2 TOTAL: 11	2,600	4,569	major	

B6. APPLICATION OF FACTORS - EXCLUSIONARY AND NON-EXCLUSIONARY

The results (in terms of the application of factors) of the site area identification process are summarized in Table 3.4 in the main body of the report.

Table B.6.1 provides a series of summary reasons for why particular factors were treated as exclusionary.

Table B.6.2 provides a series of summary reasons for why particular factors were treated as non-exclusionary.

TABLE B6.1

Site Area Identification Factors - Exclusionary

Factors	Fails to Provide Second Level of Protection	Major Potential Adverse Effects	Difficult to Confirm Suitability	Difficult to Mitigate Impacts	Oct. & Nov.[1] 1983 Workshop Preferences	Comments
Physical Resources:						
• surface granular soil	0	0		0	0	• could provide potential migration paths for off-site contaminant movement
• stream course	0	0		0	0	• as above
• flood plain	0	0		0	0	• as above
• wetland	0	0		0	0	• as above
• drumlin (Niagara)	0	0		0	0	• as above
• drumlin field			0		0	• as above; difficult to confirm suitability
• moraine			0		0	• as above; difficult to confirm suitability
Land Use:						
• residential, designated and built-upon		0		0	0	• significant adverse social and economic impacts; incompatible land use
• residential, designated, serviced and vacant		0		0	0	• as above

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[1] For ease of understanding, the factors used at the October and November 1983 workshops were less detailed than those used in the constraint mapping.

TABLE B6.1 (Cont'd)

Site Area Identification Factors - Exclusionary

Factors	Fails to Provide Second Level of Protection	Major Potential Adverse Effects	Difficult to Confirm Suitability	Difficult to Mitigate Impacts	Oct. & Nov. 1983 Workshop Preferences	Comments
• commercial, designated and built-upon		0		0		• as above
• residential, existing, rural and agricultural		0		0		• as above
• residential, designated and vacant		0		0		• as above
• commercial, designated and vacant		0		0		• as above
• Indian Reserves	0					• major potential social and environmental impact • not subject to Provincial control; would only be considered if requested by bands to site facility in reserve
Recreation and Community Features						
• hospital		0		0	0	• major facility; difficult to relocate; high temporary population; possible sensitive population; major land use
• nursing home		0		0	0	• sensitive populations; difficult to evacuate

TABLE B6.1 (Cont'd)

Site Area Identification Factors - Exclusionary

Factors	Fails to Provide Second Level of Protection	Major Potential Adverse Effects	Difficult to Confirm Suitability	Difficult to Mitigate Impacts	Oct. & Nov. 1983 Workshop Preferences	Comments
• home for the aged		0		0	0	• sensitive populations; difficult to evacuate
• regional shopping centre		0		0	0	• as above
• public building (emergency function)		0		0	0	• major facilities - difficult to relocate; high temporary and permanent populations; major land use
• special education facility		0		0	0	• difficult to relocate or evacuate; high temporary and permanent populations
• post secondary education facility		0		0	0	• major facilities - difficult to relocate; high temporary and permanent populations; major land use
• theme park		0		0	0	• major facilities - difficult to relocate; high
Agriculture:						
• existing speciality crops		0		0	0	• major adverse effect; high productivity; limited opportunity for relocation

TABLE B6.1 (Cont'd)

Site Area Identification Factors - Exclusionary

Factors	Fails to Provide Second Level of Protection	Major Potential Adverse Effects	Difficult to Confirm Suitability	Difficult to Mitigate Impacts	Oct. & Nov. 1983 Workshop Preferences	Comments
• Class 1 or 2 with row crops or corn-wheat		0		0	0	• high capability/ productivity crops
• Class 1 and 2 with mixed, cereal grain, hay-grain or hay (good quality)		0		0	0	• as above
• Class 3 with row crops or corn-wheat		0		0	0	• as above
• Class 3 with mixed, cereal grain, hay-grain or hay (good quality)		0		0	0	• PI only; less diversity of choice required
• Class 1 or 2 with hay (poor quality), pasture or grazing		0		0	0	• PI only; less diversity of choice required
• Class 4 with row crops, corn-wheat		0		0	0	• PI only; less diversity of choice required
• Class 4 with mixed, cereal grain, hay-grain or hay (good quality)		0		0	0	• PI only; less diversity of choice required
Transportation:						
• major airports	0					• Transport Canada airports only

TABLE B6.2

Site Area Identification Factors - Non-Exclusionary

Factors	1	2	3	4	5	6	7	8[1]	Comments
Physical Resources									
° till and lacustrine clay plain	0							0	° provides second level of protection
° drumlin (Halton)	0								° provides second level of protection
° poor surface drainage	0		0		0				° mitigation possible, tendency to be less productive agriculturally
Biological Resources									
° SEUs					0	0	0		° not possible to generalize across class
° non-SEU woodlots greater than 20 ha			0		0	0	0		° other factors inadequate information for decision-making
Land Use									
° industrial, designated and vacant	0	0						0	° compatible land use
° rural, designated	0						0		° considerable variation in significance and suitability; inadequate information for decision-making; potentially suitable

LEGEND:

1. potentially suitable/compatible
2. easy to confirm suitability
3. needs intensive field investigations
4. needs intensive community dialogue
5. potential for mitigation
6. contributes to diversity of choice
7. difficult to generalize across classes
8. October and November 1983 workshop preferences

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[1] For ease of understanding, the factors used at the October and November 1983 workshops were less detailed than those used in the constraint mapping.

TABLE B6.2 (Cont'd)

Site Area Identification Factors - Non-Exclusionary

Factors	1	2	3	4	5	6	7	8[1]	Comments
• industrially designated, serviced and vacant	0			0				0	• potentially suitable
• provincial planning areas	0	0					0		• variation in significance and sensitivity - potentially suitable
• industrial designated and built upon	0	0					0	0	• potentially suitable - can be readily confirmed in subsequent stages
• publicly owned lands	0	0				0	0	0	• as above
Recreation and Community Features									
• public building (non-emergency function)	0	0			0		0		• as above
• school	0	0			0		0		• as above
• conservation area	0	0			0		0		• as above
• municipal, regional and private park	0	0			0		0		• considerable variation in significance and sensitivity - can be readily confirmed in subsequent stages

LEGEND:

1. potentially suitable/compatible
2. easy to confirm suitability
3. needs intensive field investigations
4. needs intensive community dialogue
5. potential for mitigation
6. contributes to diversity of choice
7. difficult to generalize across classes
8. October and November 1983 workshop preferences

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[1] For ease of understanding, the factors used at the October and November 1983 workshops were less detailed than those used in the constraint mapping.

TABLE B6.2 (Cont'd)

Site Area Identification Factors - Non-Exclusionary

Factors	1	2	3	4	5	6	7	8[1]	Comments
° golf course	0	0			0		0	0	° considerable variation in significance and sensitivity - can be readily confirmed in subsequent stages of analysis
° commercial recreation facility	0	0			0		0		° as above
° community centre	0	0			0		0		° as above
° cultural centre	0	0			0		0		° as above
° museum	0	0			0		0		° as above
° fairground/ exhibition	0	0			0		0		° as above
° campground	0	0			0		0		° as above
° public sports facility	0	0			0		0		° as above
° private sports facility	0	0			0		0		° as above
Agriculture									
° Class 5, 6 or 7 with any use	0							0	° potentially suitable

LEGEND:

1. potentially suitable/compatible
2. easy to confirm suitability
3. needs intensive field investigations
4. needs intensive community dialogue
5. potential for mitigation
6. contributes to diversity of choice
7. difficult to generalize across classes
8. October and November 1983 workshop preferences

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[1] For ease of understanding, the factors used at the October and November 1983 workshops were less detailed than those used in the constraint mapping.

TABLE B6.2 (Cont'd)

Site Area Identification Factors - Non-Exclusionary

Factors	1	2	3	4	5	6	7	8[1]	Comments
° Class 3 or 4 with non-agricultural land use	0					0			° relatively less suitable agriculturally potentially suitable in subsequent stages
° Class 1 or 2 with non-agricultural land use	0					0			° relatively less suitable agriculturally - potentially suitable in subsequent stages
° Class 3 or 4 with hay (poor quality), pasture or grazing						0			° preferably not but retain to maintain diversity of choice
° Class 4 with mixed, cereal grain, hay-grain or hay (good quality)						0			° as above - only pertains to landfill
° Class 4 with row crops or corn-wheat						0			° as above only pertains to landfill
° Class 1 or 2 with hay (poor quality), pasture or grazing						0			° as above - only pertains to landfill
° Class 3 - mixed and/or cereal grain, hay-grain or hay (good quality)						0			° as above - only ° pertains to landfill ° as above

LEGEND:

1. potentially suitable/compatible
2. easy to confirm suitability
3. needs intensive field investigations
4. needs intensive community dialogue
5. potential for mitigation
6. contributes to diversity of choice
7. difficult to generalize across classes
8. October and November 1983 workshop preferences

[1] For ease of understanding, the factors used at the October and November 1983 workshops were less detailed than those used in the constraint mapping. The diversity of siting choices issue is explored in the following subsections.

IR-7/AP/C

VOLUME 1 - BOUNDARY ADJUSTMENTS - CANDIDATE AREAS 7, 8 AND 17

APPENDIX C

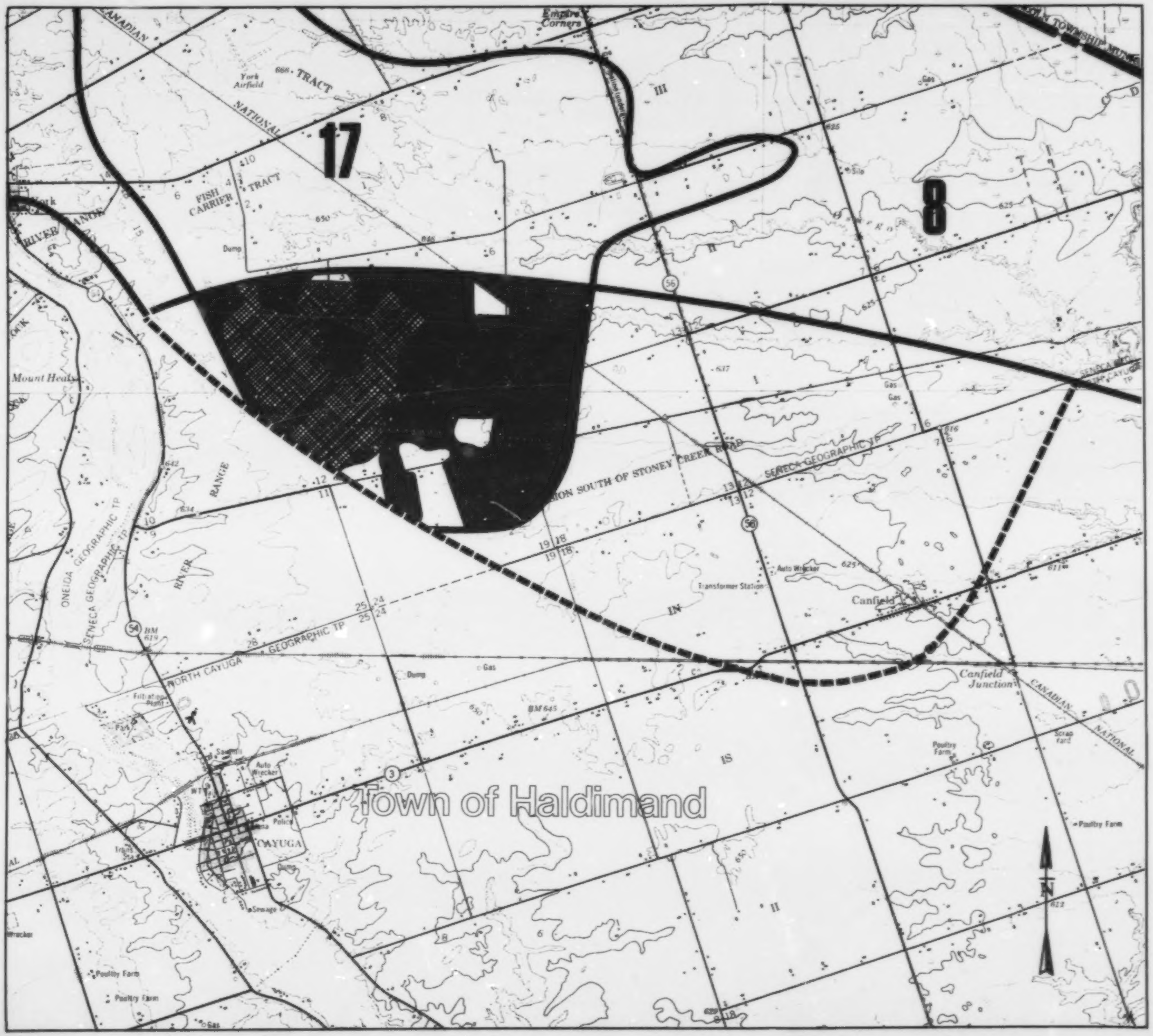
In the OWMC Phase 3 Interim Report (May 1983), 19 candidate areas were identified which were considered suitable for various facility components. One of the factors which was employed in the delineation of candidate areas was travel time from the 400 series highways. More particularly the portion of the candidate region which was beyond the 30 minute travel time contour was excluded from further consideration. In addition to the disadvantage of being relatively inaccessible from major highways this area was also recognized as not possessing offsetting advantages "as compared with the larger and more accessible candidate areas in terms of: industrially designated or publicly held lands; geologic/hydrogeologic conditions; surface water; agricultural productivity or capability; or population density "(OWMC 1983. p31).

In the course of reviewing the Phase 3A analysis an error and an inconsistency were identified which affected the placement of the 30 minute travel time contour. As indicated in Figures C.1 and C.2 the replotting of the contour resulted in a southerly extension of candidate areas 7, 8 and 17. Once the boundaries of these candidate areas were redefined these additional areas were subject to the same level of analysis undertaken for the other candidate areas. This appendix briefly describes the results of these additional investigations. The roles of the other site selection consultants in this analysis are highlighted in their Phase 3B site selection reports.

Candidate Area 17 is suitable for integrated or landfill only facility components based on soil depth and consistency characteristics as defined by Gartner Lee Associates (Gartner Lee Associates Ltd. 1984. Geologic and Hydrogeologic Inventory of the Golden Horseshoe Candidate Region and Ontario Waste Management Corporation. 1983b. Facilities Development Process: Phase 3 Interim Report). Candidate Area 17 is also hydrogeologically suitable for incinerator/physical treatment facilities. As a result of more shallow silt-clay soils Candidate Area 7 and 8 are hydrogeologically suitable only for an incinerator and/or a physical/chemical treatment plant.

With the application of the site area identification agricultural exclusionary factors by Ecologistics Ltd. all but four areas within Candidate Area 17 were found to contain exclusionary constraints for the establishment of the integrated/landfill facility components. Three of those areas were found to be too small and irregularly shaped to accommodate a landfill facility (110 ha). The third area appeared to meet the minimum size requirement. However, a large SEU (SEU 17-1) occurs in 95% of this area. Gartner Lee indicated that this SEU was of sufficient significance and sensitivity that consistent, with the potential site identification exclusionary factors, (Volume 2) the SEU should be treated as exclusionary. The remaining constraint-free area which is not covered by SEU 17-1 is too small and is irregularly shaped and will not accommodate a landfill/integrated facility. On the basis of these constraints, the site selection team concluded that this additional area was not suitable for a landfill or fully integrated facility components.

Neither of the additional areas added (Candidate Areas 7, 8 or 17) contain publicly owned or industrially designated sites of sufficient size to locate an incinerator physical/chemical treatment plant. The two areas also lack any other offsetting benefits in the form of good regional access, proximity to the 400 series highways or close proximity to a landfill site area. As a result, consistent with the application of potential site identification factors (see Volume 2) - the site selection team concluded that any of the new portions of Candidate Areas 7, 8 or 17 were suitable for the establishment of an incinerator and/or a physical chemical treatment plant.


Empire Corners
York Airfield
TRACT
NATIONAL
CANADIAN
17
8
FISH CARRIER TRACT
Dump
RIVER
Mount Healy
ONEIDA GEOGRAPHIC TP
SENECA GEOGRAPHIC TP
RANGE
RIVER
CONCESSION SOUTH OF STONEY CREEK ROAD
SENECA GEOGRAPHIC TP
NORTH CAYUGA GEOGRAPHIC TP
SENECA CAYUGA TP
Transformer Station
Auto Wrecker
Canfield
Canfield Junction
CANADIAN NATIONAL
Scrap Yard
Poultry Farm
Dump
Gas
BM 645
Town of Haldimand
CAYUGA
Police
Sewage
Poultry Farm
56
54
3
N

OWMC Ontario Waste Management Corporation

Consultant

Legend:

■ Agricultural Exclusionary Factors

▨ SEU

▬ ▬ ▬ Revised Candidate Area Boundaries 8 and 17

▬▬▬ Candidate Area Boundary

20 Candidate Area Number

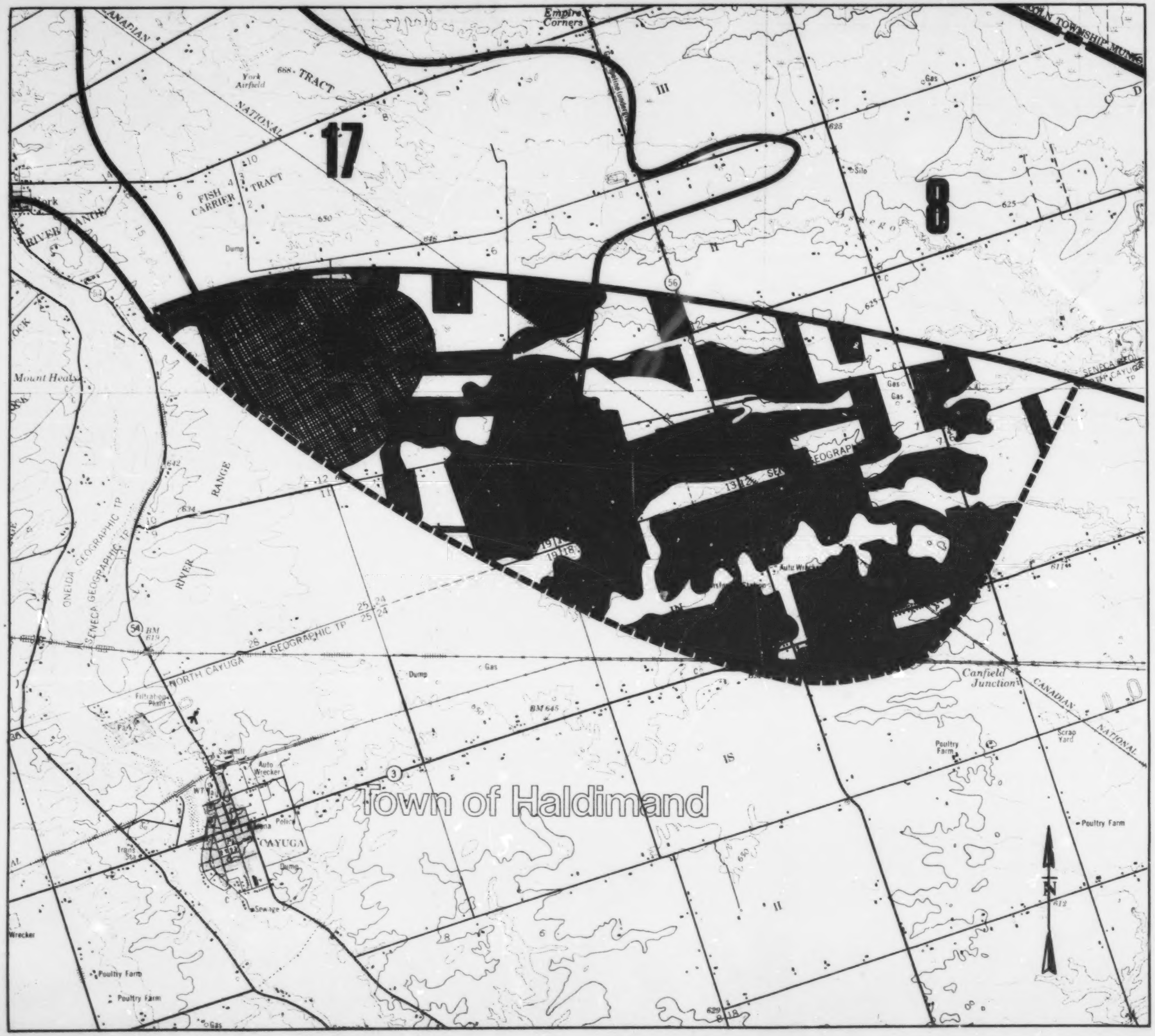
▬▬ ▬ Municipal Boundary

1 0 1 mile
2 kilometres 1 0 1000 metres
scale 1: 50 000

Composite Constraint Map Revised Boundary- Candidate Areas 7,8 and 17 Standard Landfill and Fully Integrated Facility

SITE AREA IDENTIFICATION

October 1984 FIGURE C.1


Empire Corners
CANADIAN
York Airfield
668 TRACT
NATIONAL
17
III
8
FISH CARRIER
TRACT
York
RIVER
GRAND
Dump
56
54
Mount Healy
RANGE
RIVER
ONEIDA GEOGRAPHIC TP
SENECA GEOGRAPHIC TP
NORTH CAYUGA GEOGRAPHIC TP
SENECA TP
NORTH CAYUGA TP
Gas
Silo
Auto Wrecker
Canfield Junction
CANADIAN NATIONAL
Filtration Plant
Sawmill
Police
CAYUGA
Dump
Sewage
Poultry Farm
Scrap Yard
Wrecker
3
Town of Haldimand
N

OWMC Ontario Waste Management Corporation

Consultant

Legend:

■ Agricultural Exclusionary Factors

▨ SEU

Revised Candidate Area Boundaries 8 and 17

Candidate Area Boundary

20 Candidate Area Number

Municipal Boundary

1 0 1 mile

2 kilometres 1 0 1000 metres

scale 1: 50 000

Composite Constraint Map
Revised Boundary - Candidate Areas 7, 8 and 17.
Partially Integrated Facilites
SITE AREA IDENTIFICATION

October 1984

FIGURE C.2

Volume

2

Final report

Ontario
Waste Management
Corporation

A provincial crown corporation.

DILLON

SITE SELECTION PROCESS

PHASE 3B: SELECTION OF CANDIDATE SITES

Site Selection

Volume 2 - Identification of Potential Sites

December 1984

DILLON
Consulting Engineers & Planners

OUR FILE:
YOUR FILE:

9494-31

18 December 1984

Ontario Waste Management Corporation
2 Bloor Street West
11th Floor
Toronto, Ontario
M4W 3W2

Attention: Dr. B.D. Mitchell,
Director of Corporate
Planning and Development

Site Selection Process - Phase 3B:
Selection of Candidate Sites - Site
Selection - Volume 2 -
Identification of Potential Sites

Dear Sirs:

We are pleased to submit Volume 2 of our four volume report - Site Selection Process - Phase 3B: Selection of Candidate Sites. This volume documents the process employed to identify potential sites within the site areas.

Yours truly,
M.M. DILLON LIMITED

David P. Lawrence, M.C.I.P.
Site Selection Manager

DPL:ch
Encl.

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12/04/84

SITE SELECTION PROCESS

PHASE 3B: SELECTION OF CANDIDATE SITES

Site Selection - Volume 2: Identification of Potential Sites

TABLE OF CONTENTS

4. Introduction 1
   - 4.1 Purpose and Scope 1
   - 4.2 Volume Format 2

5. Process For Identifying Potential Sites 4

6. Identification of Factors 7
   - 6.1 Major Inputs to Factor Identification 7
     - 6.1.1 Site Selection Objectives 7
     - 6.1.2 Facility Characteristics Assumptions 9
     - 6.1.3 Site Selection Principles 10
     - 6.1.4 Data Collection and Analysis 10
     - 6.1.5 Application of Factors 10
   - 6.2 Factors for Identifying Potential Sites 17

7. Data Collection Analysis 22
   - 7.1 Purpose and Scope 22
   - 7.2 The Data Collection and Analysis Process 22

8. Ranking of Factors 25
   - 8.1 Ranking of Factors - Individual Consultants 25
   - 8.2 Overall Ranking of Factors 27

9. Application of Factors 36
   - 9.1 Factor Application Process 36
   - 9.2 Initial Suitability Screen 40
     - 9.2.1 Reasons for Exclusion 40
   - 9.3 Suitability Screen 47
     - 9.3.1 Suitability Screening Process 47
     - 9.3.2 Severe Impacts 48
     - 9.3.3 Relative Suitability 58
   - 9.4 Compatibility Screen 61
   - 9.5 Systems Screen 67
   - 9.6 Conclusions and Results 68

References

Appendix D

Table D5.1 - Relationship of Objectives Used to Identify Potential Sites

Table D5.2 - Identification of Potential Sites - Objectives not Considered at This Stage

Table D5.3 - Role of Facilities Characteristics Assumptions in Identifying Potential Sites

Table D5.4 - Role of Site Selection Principles in Identifying Potential Sites

Table D5.5 - Identification of Potential Sites - Factor Definitions and Significance

Appendix E

Table E5.1 - Ranking of Factors - Identification of Potential Sites

Table E5.2 - Overall Ranking of Factors - Identification of Potential Sites - Level 1

Table E5.3 - Overall Ranking of Factors - Identification of Potential Sites - Level 2

Table E5.4 - Overall Ranking of Factors - Identification of Potential Sites - Level 3

Table E5.5 - Overall Ranking of Factors - Identification of Potential Sites - Level 4

Table E5.6 - Treatment of Site Areas - Relative Suitability

Table E5.7 - Facility Arrangements - Sites for Initial Comparative Evaluation

Table E5.8 - Reasons for Site Retention

Appendix F

- Summary Analysis of Site Areas

List of Figures

Figure 5.1 - Process for Identifying Potential Sites

Figure 9.1 - Potential Site Identification

List of Tables

Table 6.1 - Factors for Identifying Potential Sites

Table 8.1 - Summary of Overall Ranking of Factors

Table 9.1 - Suitability Screening - Reasons for Exclusion

Table 9.2 - Overall Site Area Rating - Landfill Site Areas Remaining After Severe Impact Suitability Screen

Table 9.3 - Overall Site Area Ratings - Incinerator/Physical Chemical Treatment Plant Site Areas Remaining After Severe Suitability Screen

Table 9.4 - Geographic Grouping of PI Site Areas

4. INTRODUCTION

4.1 PURPOSE AND SCOPE

This volume represents the second of a four volume report. This report documents the process by which candidate sites, for the Ontario Waste Management Corporation (OWMC) waste treatment facilities were selected within the candidate areas.

- Volume 1 describes the Phase 3B site selection process, and the principles, goals, objectives, factors and the general facilities characteristics assumptions which guided that process. Volume 1 also documents the process by which site areas were identified within the candidate areas;
- Volume 2 (this volume) documents the process employed to identify potential sites within the site areas;
- Volume 3 documents the process by which the potential sites were compared to produce a short list of candidate sites;
- Volume 4, a map portfolio, contains the major maps which support Volumes 1, 2 and 3.

This report builds upon the Steps 1 (OWMC, 1982), 2 (OWMC, 1983a) site selection work and represents an elaboration of the overview to Step 3 of the site selection process provided in the OWMC Phase 3 Report and the OWMC Appendix to the Phase 3 Report (1984a and b).

M.M. Dillon Limited (Dillon) was responsible for the technical coordination and synthesis of the Phase 3B site selection activities carried out by a team of consultants specializing in hydrogeologic, biological, land use, socio-economic, air quality, agricultural, transportation and engineering concerns.

The consultants' role in this process was to assist OWMC through data collection and analysis, the formulation of recommendations regarding factors, factor rankings and applications and in the technical documentation of candidate site identification. The consultants and OWMC staff and management jointly participated in the ranking and application of factors.

Each consulting firm prepared a separate technical report documenting its specific inputs to the site selection process.

This report represents the integration of those inputs. Therefore, any limitations or qualifications identified in individual technical reports also apply to this report.

In addition, this report represents the documentation of a site selection process which involved Dillon, the other site selection consultants and OWMC management, communications, environmental and engineering staff and consultants.

This report also incorporates inputs received through the public consultation program. Volume 1 - lists OWMC documents and materials considered. Reference should be made to those documents for further details regarding the work undertaken by the other site selection consultants and for other work undertaken by or on behalf of OWMC.

4.2 VOLUME FORMAT

This volume consists of six chapters, numbered 4 through 9.

- Chapter 4 (this Chapter) is the Introduction;

- Chapter 5 describes the steps within the second stage in the candidate site identification process (the identification of potential sites) and the rationale for those steps;

- Chapter 6 discusses the process by which the factors for identifying potential sites were identified and provides the rationale for each factor;

- Chapter 7 describes the general data collection and analysis methods employed and the rationale for these methods;

- Chapter 8 describes the factor ranking process and the reasoning behind the rankings;

- Chapter 9 documents the manner in which those factors were employed to progressively identify potential sites. The rationale behind the application of the potential site identification factors is also provided.

The appendices which support this volume are provided at the back of this volume.

5. PROCESS FOR IDENTIFYING POTENTIAL SITES

The process for identifying potential sites began after constraint mapping had identified 152 site areas requiring more detailed consideration (see Volume 1 of this report). These site areas were progressively reduced in number and size until a relatively small number of potential sites remained.

The process employed to identify potential sites is depicted in Figure 5.1. Factors were identified based on a review of site selection principles, goals and objectives, the factors employed or not employed at the site area identification stage and facilities characteristics assumptions.

The process occurred in a series of steps or screens. The other consultants' data collection and analysis processes also occurred in steps with the 1:50,000 scale data being employed for the initial suitability screen factor application and a more detailed set of data, mapped at a scale of 1:10,000, being used for the three remaining screens. The process of collecting and analyzing data led to some refinements in the potential site identification factors.

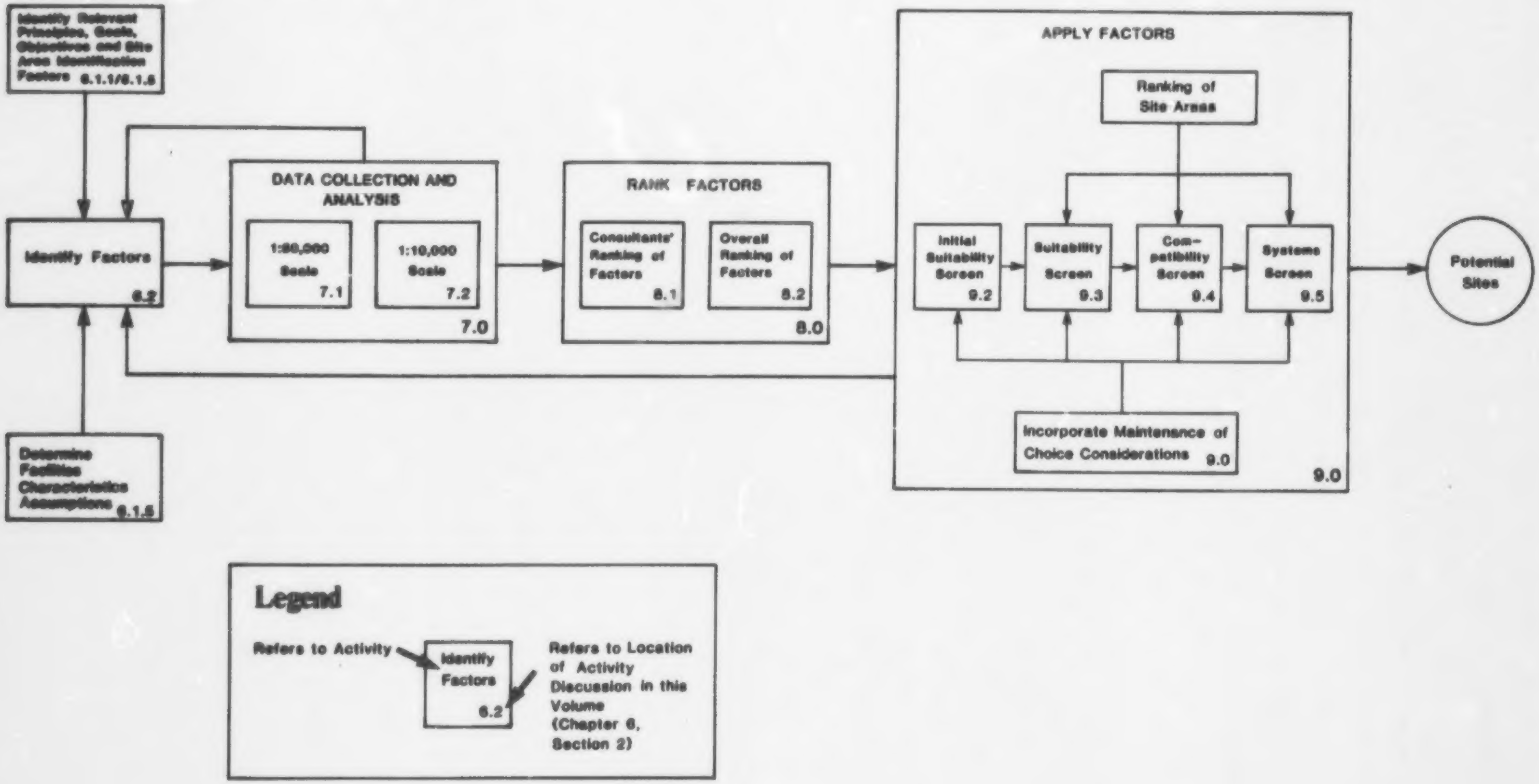
Factors were also ranked in a two step process[1]. Initially, the factors were ranked within disciplines by the consultants responsible. These individual consultant rankings were then combined by the site selection team into an overall ranking of factors.

The factor application process took place in a series of screens. With each screen conclusions were made by the site selection team regarding whether or not to drop site areas based on the analysis and interpretation of the data obtained. The site areas which were not dropped during one screen were retained for further consideration in subsequent screens. Considerations which influenced the site selection team's recommendation

---

[1] Factors were ranked in terms of relative suitability for the establishment of facility components.

Figure 5.1 POTENTIAL SITE IDENTIFICATION PROCESS


Identify Relevant Principles, Goals, Objectives and Site Area Identification Factors 6.1.1/6.1.5
Identify Factors 6.2
Determine Facilities Characteristics Assumptions 6.1.5
DATA COLLECTION AND ANALYSIS
1:50,000 Scale 7.1
1:10,000 Scale 7.2
7.0
RANK FACTORS
Consultants' Ranking of Factors 8.1
Overall Ranking of Factors 8.2
8.0
APPLY FACTORS
Ranking of Site Areas
Initial Suitability Screen 9.2
Suitability Screen 9.3
Com-patibility Screen 9.4
Systems Screen 9.5
Incorporate Maintenance of Choice Considerations 9.0
9.0
Potential Sites
Legend
Refers to Activity
Identify Factors 6.2
Refers to Location of Activity Discussion in this Volume (Chapter 6, Section 2)

to retain or reject a site area included the site specific constraints identified by the consultants, the rankings of factors, the ratings of site areas, agency and public concerns, and the principle of maintenance of choice.

Whenever there was any doubt by the site selection team concerning the suitability of a site area, it was retained for further consideration. The product of this process was a series of potential sites suitable for more detailed analysis during the next stage in candidate site identification - initial comparative evaluation.

6. IDENTIFICATION OF FACTORS

6.1 MAJOR INPUTS TO FACTOR IDENTIFICATION

The factor identification process began with a preliminary identification of possible factors by the site selection consultants. These preliminary factor lists were discussed in working meetings of the site selection team.

The process of factor identification reflected:

- the desire to satisfy as many of the site selection objectives as possible;
- the nature of the proposed facilities as defined by the facilities characteristics assumptions;
- the site selection principles;
- the results of the data collection and interpretation;
- the analysis undertaken through the course of factor application.

6.1.1 Site Selection Objectives

As inputs to this process Dillon's site selection staff prepared tables which related goals and objectives to the potential site area identification factors.

Table D5.1 in Appendix D identifies which site selection factors were considered by the site selection team as appropriate for use in potential site identification and how they relate to site selection objectives.

The reasons why particular objectives were addressed include:

- the magnitude of potential risks or impacts;
- the objective could be addressed through an overview analysis of available data and/or brief roadside reconnaissance field checks;
- the objective could be addressed with mapping at a scale of 1:50,000 or 1:10,000;
- the objective reflected site considerations which varied from site area to site area and which could be employed in a comparative analysis;
- the objective reflected a public concern identified through the public consultation program;
- the consideration addressed by the objective had a direct bearing on site area suitability, i.e. the resulting analysis addressed major potential impacts rather than relatively minor impacts or very subtle differences among site areas.

Table D5.2 in Appendix D identifies which site selection objectives the site selection team decided should not be addressed in the potential site identification process. Summary reasons concerning why it was considered more appropriate to address these objectives at subsequent stages in the site selection process are also provided in Table D5.2.

The major reasons why objectives were not addressed include:

- a detailed comparative analysis would have been required to establish major differences among site areas. In some instances the differences among site areas might have been very slight;

- a detailed engineering analysis and/or a detailed analysis of the site area, the vicinity of the site area, access roads to the site area or the broad area surrounding the site area would have been necessary to determine site acceptability. It was concluded that before such analyses should be undertaken that site areas possessing major constraints which would clearly preclude facility development should be excluded;

- detailed interviews with residents, owners, businesses, community leaders and local officials and representatives would have been necessary to adequately address the objective. It was concluded that before such analyses should be undertaken, sites possessing major constraints which would clearly preclude facility development should be excluded;

- the potential impacts might be overcome or substantially reduced through mitigative measures;

- the magnitude of the impact itself was expected to be relatively small;

- the objective had been adequately addressed in previous stages of the site selection process.

6.1.2 Facilities Characteristics Assumptions

A further input to the factor identification process was the consideration of the relationship of potential factors and assumed facilities characteristics. The relationship between facilities characteristics assumptions and potential site identification is highlighted in Table D5.3. A more detailed description of the role of facilities characteristics assumptions in Phase 3B is provided in Section 2.4 and Tables A1.2 and A1.3 in Appendix A of Volume 1 of this report. The technical basis for the Facilities Characteristics assumptions is provided in the M.M. Dillon Limited report Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones (1984 a) and the OWMC Facilities Development Process Phase 3 Report (1984 a and b).

6.1.3 Site Selection Principles

The site selection principles also contributed to the determination of the site identification factors. The roles of these principles in potential site identification are highlighted in Table D5.4.

6.1.4 Data Collection and Analysis

The preliminary list of potential site identification factors was further refined and modified during the course of data collection and analysis and through the various steps in factor application.

6.1.5 Application of Factors

Different potential site identification factors were employed in each of the screening steps in potential site identification as described in the following sections.

a) **Initial Suitability Screen Factors (1:50,000 scale)**

The factors employed in the identification of potential sites during the initial suitability screening analysis represented a combination of factors previously employed (exclusionary factors in site area identification) and factors considered for use in site area identification but not employed at that stage.

i) Site Area Exclusionary Factors

Exclusionary factors for site area identification were employed again by the site selection team in the initial suitability screening step for the following reasons:

- during the course of site area by site area interpretations some boundary refinements and adjustments were made. These refinements led, in some instances, to portions of site areas becoming subject to site area identification exclusionary constraints;

- the site area by site area interpretation also led to the reconsideration of whether certain site areas satisfied the minimum site size and configuration requirements;

- as the potential site identification stage was being undertaken, additional agricultural data were made available which resulted in some site areas satisfying the site area identification agricultural exclusionary requirements;

- exclusionary factors were used to define the limits beyond which site area boundaries could not extend;

- a number of the site areas which resulted from the site area identification process had floodplains and stream courses within their boundaries. These features affected too small a portion of the site area to warrant the rejection of the site area during site area identification. In addition, particularly in the case of the PI site areas, it was not clear whether the operations portion of the facility components could have been established without conflicting with the floodplains or stream courses. During the initial suitability screen, it became possible to interpret these features on an individual basis and, in combination with other screening factors such as major roads and SEUs, to screen site areas.

ii) Site Area Identification - Non-Exclusionary Factor - Significant Environmental Units

As described in Section 3.5.4(a) of Volume 1, data on significant environmental units (SEUs) were compiled during site area identification. At that time it had been concluded that SEUs should be treated as a non-exclusionary factor. This conclusion stemmed from the variability of the data base encompassed by the SEU factors. It was, however, recognized by the site selection team that SEUs could be included in the site selection process at a point where a site area by site area interpretation of significance and sensitivity could take place. It was also recognized that, in most instances, SEUs are highly environmentally sensitive or significant. Thus development within SEUs would involve a strong likelihood of creating a significant adverse environmental impact.

In the site area identification step, classes of features (as represented by factors) were treated as either exclusionary or non-exclusionary; in contrast, during the initial suitability screen of potential site identification it was possible to interpret the suitability of each site area individually. Thus during potential site identification it was possible to review the documentation and to conduct roadside field investigations of each SEU. These investigations provided the basis for deciding whether each SEU should or should not be treated as an exclusionary constraint.

iii) Transportation and Utilities

During site area identification the transportation consultant, M.M. Dillon Limited, collected and mapped a considerable amount of data on arterial roads (regional roads and provincial highways), utility transmission installations and railway lines. These data were not employed during site area identification because of the variability in the degree of constraint which individual transportation and utility facilities might pose for the establishment of the facility components.

The transportation and utility data were mapped at a scale of 1:50,000. After some refinements and confirmation of that data, the transportation consultant concluded that site area by site area interpretations would be appropriate. Thus if a site area was for example, severed by a highway and a railway, agency and roadside field checks could be conducted. These investigations would serve to determine whether, and the extent to which, the particular highway and railway in question would inhibit site development. The site selection team, therefore, concluded that major transportation and utility facility factors could be introduced during the initial suitability screen.

iv) Combinations of Factors

Many of the site areas considered during the initial suitability screen were characterized by more than one initial suitability screening constraint, e.g. roads, transmission corridors, SEUs. In addition, the factors employed during the initial suitability screen frequently resulted in the rejection of only a portion of a site area. In such cases the site size and configuration factor was employed by the site selection team in conjunction with the other screening factors to determine site suitability.

b) Suitability, Compatibility and Systems Screen Factors (1:10,000 scale)

The major difference between the initial suitability screen and the suitability, compatibility and systems screens was that the latter three screens were applied at a scale of 1:10,000 based on more detailed site-related information obtained from roadside field checks undertaken by the site selection consultants. The difference in scale and data base had a number of implications with respect to the factors identified and their application.

The factors employed during the suitability, compatibility and systems screens represented a combination of factors previously employed (exclusionary factors in site area identification), factors considered for use in site area identification but not employed at that time (non-exclusionary factors), and new factors.

i) Site Area Identification Exclusionary Factors

In terms of the site area identification exclusionary factors the shift in scale meant that, in the case of the site size and configuration factor, site areas which had appeared to meet the minimum requirement were found to be unacceptable. In addition, the more detailed analysis at a scale of 1:10,000 and the roadside field checks conducted by the other site selection consultants enabled the identification of many local features (e.g. stream courses, wetlands, spoil piles) which possessed limitations equivalent to site area identification exclusionary factors. Exclusionary constraints were also used by the site selection team to define the limits beyond which site boundaries could not be extended.

ii) Site Area Identification - Non-Exclusionary Factors

With respect to the non-exclusionary site area identification factors, the SEU factor was employed to refine the boundaries of some site areas. Non-SEU woodlots greater than 20 ha and facilities such as arterial roads, utilities and railways were also employed for boundary delineation purposes.

iii) New Factors

It was considered desirable by the site selection team to introduce a number of the new factors in the siting process during the suitability, compatibility and systems screens for the following reasons:

- more detailed, site-related information was available as a result of the roadside field checks undertaken by specialists in agriculture, land use, transportation, social, physical and biological concerns for many of the site areas;
- the need to limit the analysis to those factors which could be employed for boundary delineation purposes could be overcome. At the potential site identification stage it became possible to compare site areas on the basis of the general characteristics of each site area and the area surrounding each site area e.g. transportation access, population concentrations in close proximity to the site areas.
- the 1:10,000 screening steps included both relative and absolute site suitability considerations. Therefore, it was possible to introduce new factors into the siting process which could be employed in the relative ratings of site areas and in the exploration of maintenance of choice tradeoffs.

The extent to which new factors were introduced into the 1:10,000 screening steps was limited to those considerations which:

- could be analyzed by more detailed interpretations of existing available data;

- could be readily confirmed by brief field checks;

- would identify major constraints on or in the immediate vicinity of site areas;

- limit the use of comparative analysis to excluding site areas which were highly unsuitable for one or more factors and where there were no significant offsetting benefits. It was also stipulated by the site selection team that the exclusion of such areas should not result in an appreciable reduction in the range of siting choices available. Where there was any uncertainty, the site area was retained for further consideration.

At this stage the site selection team concluded that siting matters which would have necessitated detailed field investigations and community contacts would not be addressed in potential site identification nor would matters which required detailed comparative analysis. Such investigations were not considered warranted until site areas which were subject to readily identifiable severe constraints had been excluded.

iv) Combinations of Factors

As was the case during the initial suitability screen, the site areas which were considered during the suitability, compatibility and systems screens were influenced by constraints and considerations encompassed by more than one factor. Thus various combinations of factors were employed through the course of all three screens. In addition, the factors employed in the suitability screens frequently resulted in the rejection of only a portion of a site area. In such cases, the site size and configuration factor was employed by the site selection team in conjunction with the other screening factors to determine site suitability.

6.2 FACTORS FOR THE IDENTIFICATION OF POTENTIAL SITES

The factors employed to identify potential sites are listed in Table 6.1. Table 6.1 indicates whether the factors were employed during the initial suitability screen or during the subsequent screens (suitability, compatibility and systems). Table D5.5 in Appendix D provides a summary definition and a description of the significance of each factor.

TABLE 6.1

Factors for Identifying Potential Sites[1] [2]

FACTORS	STEPS AT WHICH FACTORS WERE APPLIED TO IDENTIFY POTENTIAL SITES	
	INITIAL SUITABILITY SCREEN (1:50000)	SUITABILITY, COMPATIBILITY AND SYSTEMS SCREENS (1:10,000)
Site Size and Shape (M.M. Dillon Ltd.)		
• site size	0	0
• site configuration	0	0
Physical Resource (Gartner Lee Associates Ltd.)		
• exclusionary factors employed during site area identification	0	0
• natural containment potential - regional category (confining layer thickness)		0
• natural containment potential - texture of geologic material		0
• natural containment potential - geologic predictability		0
• surface drainage		0
Biological (Gartner Lee Associates Ltd.)		
• significant environmental units (SEUs)	0	0
• non-SEU woodlots greater than 20 ha		0
• other vegetation		0
• aquatic habitat		0
• terrestrial wildlife habitat		0

[1] 0 indicates the step during which each factor was applied

[2] The factors listed in the table are defined in Table D5.5 of this volume.

TABLE 6.1

Factors for Identifying Potential Sites[1] [2] (Cont'd)

FACTORS	STEPS AT WHICH FACTORS WERE APPLIED TO IDENTIFY POTENTIAL SITES	
	INITIAL SUITABILITY SCREEN (1:50000)	SUITABILITY, COMPATIBILITY AND SYSTEMS SCREENS (1:10,000)
Agricultural (Ecologistics Ltd.)		
• exclusionary factors employed during site area identification	0	0
• urban shadow		0
• predominant soil capability class		0
o existing farm building complexes		
o land use designation (site area)		0
o publicly owned land (site area)		0
Land Use, Planning and Land Ownership (Marshall Macklin Monaghan Ltd./ Leon Kentridge Associates Ltd.)		
o exclusionary factors employed during site area identification	0	0
o existing industrial uses (site area)		0
o future industrial uses (site area)		0
o existing residential uses (site area)		0
o future residential uses (site area)		0
o existing commercial uses (site area)		0
o future commercial uses (site area)		0
o provincial planning areas (site area)		0

---

[1] 0 indicates the step during which each factor was applied

[2] The factors listed in the table are defined in Table D5.5 of this volume.

TABLE 6.1

Factors for Identifying Potential Sites[1] [2] (Cont'd)

FACTORS	STEPS AT WHICH FACTORS WERE APPLIED TO IDENTIFY POTENTIAL SITES	
	INITIAL SUITABILITY SCREEN (1:50000)	SUITABILITY, COMPATIBILITY AND SYSTEMS SCREENS (1:10,000)
o publicly owned lands (site area)		0
o rural/agricultural land use designations (site area)		0
o existing industrial uses (site vicinity)		0
o future industrial uses (site vicinity)		0
o existing residential uses (site vicinity)		0
o future residential uses (site vicinity		0
o existing commercial uses (site vicinity)		0
o future commercial uses (site vicinity)		0
o rural/agricultural land use designations (site vicinity)		0
o proximity to residential communities		0
Social and Economic (Institute of Environmental Research Inc.)		
o exclusionary factors employed during site area identification	0	0
o non-exclusionary site area identification regional, community and recreation features	0	0

[1] 0 indicates the step during which each factor was applied

[2] The factors listed in the table are defined in Table D5.5 of this volume

TABLE 6.1

Factors for Identifying Potential Sites[1] (Cont'd)

FACTORS	STEPS AT WHICH FACTORS WERE APPLIED TO IDENTIFY POTENTIAL SITES	
	INITIAL SUITABILITY SCREEN (1:50000)	SUITABILITY, COMPATIBILITY AND SYSTEMS SCREENS ((1:10,000)
o local community and recreation features (local government offices, local police departments, fire stations, libraries, churches, cemeteries, local recreation facilities)	0	0
o population density	0	
o proximity to population concentrations		0
Transportation and Utilities (M.M. Dillon Ltd.)		
o arterial roads (regional roads and provincial highways)	0	0
o utility transmission installations	0	0
o railway lines	0	0
o airports	0	0
o transport cost (receiver centroids)		0
o probability of transport accidents		0

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[1] 0 indicates the step during which each factor was applied

7. DATA COLLECTION AND ANALYSIS

7.1 PURPOSE AND SCOPE

The site area identification work had resulted in the identification of 152 site areas. The purpose of the data collection and analysis work undertaken by the other site selection consultants, in the potential site identification stage, was to provide an information base from which to reduce the size and number of site areas sufficiently to permit a systematic comparative evaluation of siting options.

7.2 THE DATA COLLECTION AND ANALYSIS PROCESS

The data collection and analysis process involved the use of previously collected but not employed data, the refinement of previously used data, and the addition of further data specific to each site area. The data collection process took place at two scales of analysis - 1:50,000 and 1:10,000. The 1:50,000 scale data collection and analysis was employed in the initial suitability screen of the 152 site areas. The 1:10,000 scale data collection and analysis, for the 90 site areas which emerged after the initial suitability screen, was employed in the suitability, compatibility and systems screens.

The data collection and analysis process undertaken by the other site selection consultants included:

- a detailed review and refinement of previously collected data;
- supplementary agency contacts;
- roadside field investigations of potential site areas;
- air photo interpretation;
- the analysis and mapping of data pertaining to both the absolute and relative suitability of site areas.

After an initial review of site size considerations, previously collected environmental and transportation data, obtained by Gartner Lee Associates and Dillon respectively, were employed at a scale of 1:50,000 to reduce the number and size of site areas. The existing data base was also reviewed and interpreted for boundary delineation purposes.

A further round of data collection and analysis was then undertaken by the other site selection consultants for the 90 site areas which remained from the original 152 site areas after the first step in the screening process. The scale for this additional analysis was 1:10,000. Additional base mapping was prepared and working maps outlining the study areas were provided to each site selection consultant by Dillon staff.

The supplementary data collection process undertaken by the other site selection consultants involved some further agency contacts, air photo interpretations and reconnaissance level roadside field checks. The field checks served to verify or modify data regarding previously identified features as well as to provide information on new features.

The roadside field checks were undertaken by specialists from the other site selection consultants with expertise in agriculture, land use, hydrogeology, biology, social and economic concerns and transportation and utility concerns. Consideration was given to features both within and immediately adjacent (within approximately 400 metres) to each site area.

Once the roadside field data were obtained, the other consultants cross-checked their data against aerial photography and secondary source information. In some instances they undertook supplementary field investigations to resolve inconsistencies and to fill data gaps. Individual data maps were then prepared by each of the consultants. A composite constraint map was then prepared for each site area by Dillon's site selection staff.

This data base was then employed by the site selection team in the process of factor ranking and site area ratings. Since the exclusion of site areas took place in a series of screens, it was necessary, as the process proceeded, for the other site selection consultants to undertake supplementary data collection and analysis with each screen. It was also necessary to analyze and present the data in different formats to facilitate the screening process.

The other site selection consultants' reports provide a more detailed description of the data collection and analysis undertaken during site area screening. As the reports point out, the reconnaissance nature of the data imposed some limitations in their application. Therefore, particular care was taken in this stage to ensure that the conclusions of the site selection team regarding site area suitability reflected data base limitations. Where there were any doubts regarding suitability (because of data limitations) the site selection team concluded that the site area should be retained for further consideration.

8. RANKING OF FACTORS

8.1 RANKING OF FACTORS - INDIVIDUAL CONSULTANTS

It was recognized by the site selection team that the factors used for identification of potential sites were not all equal in importance. The site selection team, therefore, determined that the factors should be ranked from least to most favourable to the extent possible.

The bases for the ranking system were the site selection goals and principles described in Section 2.3 (Volume 1). With respect to goals, particular emphasis was placed on potential risk to human health and environmental impact. Cost was considered the least important goal. It could also not be placed within the context of overall development and operations costs during the potential site identification stage. Cost-related factors were, therefore, given a low ranking. The role of the site selection principles in factor ranking are indicated in Table D5.4 in Appendix D.

The factors were ranked by the other consultants in terms of degrees of constraint to facility establishment ranging from low to high constraints. Factors were placed at the same level where factors were considered to be approximately equal in the degree of constraint which they posed to facility establishment or where differences among factors were considered too subtle on the basis of the information available, to permit sharp distinctions.

In developing these rankings, the site selection consultants were requested by the site selection coordinating consultant (Dillon) to attempt, where possible, to distinguish among factors which:

- represented positive or very minor constraint siting considerations in any of the following senses - land use compatibility, absence or relative lowest level of constraint, provision of second level of protection;

- constituted minor siting constraints in any of the following senses - positive siting consideration but less desirable than considerations under Level 1, relatively minor constraint, potentially suitable siting consideration, ie. variability in suitability within constraint, constraint but readily mitigatible;

- represented moderate constraints to siting as reflected in any of the following senses - moderate constraint, sufficient for comparative analysis but not generally adequate for exclusion, moderate constraint but potentially mitigatible, insufficient information on site constraints to warrant exclusion;

- constituted major potential risks or impacts in the following senses; severe constraint sufficient to exclude all or part of a site area; major constraint sufficient to exclude all or part of a site area in conjunction with other major constraints; constraints previously defined as exclusionary or equivalent, failure to provide second level of protection, and low likelihood of suitability and detailed field investigations (eg. drilling) not warranted to confirm suitability.

If the other consultants concluded that they could draw further distinctions, ie. more than 4 levels of constraint, in terms of levels of suitability beyond those cited above, they were requested to do so. Where the other consultants did not consider it appropriate to place factors within all four of the levels of suitability cited above they were requested to group their factors in terms of one, two, or three of the four levels of suitability. In addition the consultants were requested to incorporate agency and public concerns into the development of their factor rankings.

The initial factor rankings prepared by the consultants were reviewed and modified by the site selection team to ensure consistency in approach, consistency (where possible) with expressed agency and public priorities, and an adequate rationale for the rankings. Table E5.1 in Appendix E indicates the rankings of the factors as prepared by the consultants together with the summary reasons for those rankings. The other site selection consultants' Phase 3B reports describe in greater detail their respective roles in factor ranking.

8.2 OVERALL RANKING OF FACTORS

The need for an overall ranking was based on the recognition by the site selection team that, for example, the lowest constraint biological factors would not necessarily be equivalent to the lowest constraint agricultural factors. It was also understood that an intrinsic part of the site selection process would be the early and ongoing consideration of critical tradeoffs among factors.

The basis for the development of an overall ranking by the site selection team were the individual consultants' factor rankings. As summarized in Table 8.1, each suitability level was comprised of a number of consultants' ranking levels.

The first step in this overall factor ranking process by the site selection team was the identification of factors which were considered to represent positive or very minor siting constraints (Level 1 factors) in any of the following senses:

- provision of a second level of protection;

- land use compatibility;

TABLE 8.1

SUMMARY OF OVERALL RANKING OF FACTORS

Overall[1] Ranking Level	Area of Responsibility[2]	Consultant[3]	Ranking Levels Developed by Consultants[4]
Level 1	o Physical Resources	o Gartner Lee Associates Ltd.	o Level 1
	o Biological Resources	o Gartner Lee Associates Ltd.	o No Constraint
	o Agriculture	o Ecologistics Ltd.	o Very Good
	o Social and Economic	o Institute of Environmental Research Inc.	o Low
	o Land Use	o Marshall Macklin Monaghan Ltd./ Leon Kentridge Associates Ltd.	o Low Constraint
	o Transportation	o M.M. Dillon Ltd.	o Low-Site Area Constraint o Best - Accident Probability Index
	o Site Size and Configuration	o M.M. Dillon Ltd.	o Unconstrained
Level 2	o Physical Resources	o Gartner Lee Associates Ltd.	o Level 2
	o Biological Resources	o Gartner Lee Associates Ltd.	o Minor Constraint
	o Agriculture	o Ecologistics Ltd.	o Good
	o Transportation	o M.M. Dillon Ltd.	o Low - Site Area Constraint o Good - Accident Probability Index
	o Site Size and Configuration	o M.M. Dillon Ltd.	o Marginal

TABLE 8.1 cont'd

SUMMARY OF OVERALL RANKING OF FACTORS

Overall[1] Ranking Level	Area of Responsibility[2]	Consultant[3]	Ranking Levels Developed by Consultants[4]
Level 3	o Physical Resources	o Gartner Lee Associates Ltd.	o Level 3
	o Biological Resources	o Gartner Lee Associates Ltd.	o Moderate Constraint
	o Agriculture	o Ecologistics Ltd.	o Fair
	o Social and Economic	o Institute of Environmental Research Inc.	o Moderate Constraint
	o Land Use	o Marshall Macklin Monaghan Ltd./Leon Kentridge Associates Ltd.	o Moderate Constraint
	o Transportation	o M.M. Dillon Ltd.	o Moderate - Site Area Constraint o Moderate - Accident Probability Index
Level 4	o Physical Resources	o Gartner Lee Associates Ltd.	o Major Identified Constraint
	o Biological Resources	o Gartner Lee Asociates Ltd.	o Major Constraint
	o Agriculture	o Ecologistics Ltd.	o Poor
	o Social And Economic	o Institute of Environmental Research Inc.	o High Constraint
	o Land Use	o Marshall Macklin Monaghan Ltd./Leon Kentridge Associates Ltd.	o High Constraint

TABLE 8.1 cont'd

SUMMARY OF OVERALL RANKING OF FACTORS

Overall[1] Ranking Level	Area of Responsibility[2]	Consultant[3]	Ranking Levels Developed by Consultants[4]
Level 4 cont'd	o Transportation	o M.M. Dillon Ltd.	o Severe - Site Area Constraint • Low - Accident Probability Index
	o Site Size and Configuration	o M.M. Dillon Ltd.	o Inadequate
	o Confirmation of Site Area Exclusionary Factors	o All Consultants	o Site Area Identification Exclusionary Factors

[1] The numbers 1 to 4 correspond to the overall ranking levels ranging from the most (Level 1) to the least favourable (Level 4) for the establishment of the facility components.

[2] Area of Responsibility refers to the specialty areas within which factor rankings were developed. Site areas were, for example, ranked for land use as low moderate and high constraints.

[3] Consultant refers to the firm which developed and applied the ranking system for the areas of responsibility noted in the second column.

[4] Ranking Level Developed by Consultants refers to the title of the ranking levels developed by each consultant which were combined to form each overall ranking level. Thus the overall ranking Level 1 is composed of physical resources-Level 1, biological resources - no constraints, agriculture-very good, etc. A more complete description of the basis for these combinations is found in Tables E5.1 to E5.5 in Appendix E of this volume. A more detailed explanation of the basis for each consultants' rankings is found in the consultants' technical reports listed in the references contained in Volume 1 of this report.

- absence or relative lowest level of constraint;

The factors which satisfied the Level 1 criteria, in the consultants' rankings and the major reasons for the overall rankings are listed in Table E.5.2 in Appendix E. This first set of factors was defined as Level 1. The major reasons for the placement of factors within Level 1 by the site selection team were as follows:

- the physical (hydrogeologic) factors provided a second level of protection; the physical (surface drainage) (e.g. floodplains) factors reflected an absence of constraints;

- the biological factors reflected an absence of constraint;

- the agriculture, land use and social factors exhibited land use compatibility and the lowest relative level of constraint;

- the transportation factors reflected an absence of site area constraints and a relatively low transportation accident probability index (as compared with other site areas scattered across the candidate areas); and

- the site size and configuration factors represented an absence of constraint.

The second step in the overall ranking process was the identification of factors which were considered by the site selection team to represent minor constraints. Factors were placed within Level 2 if they met one or more of the following criteria:

- positive siting considerations but less desirable than Level 1 factors;

- relatively minor constraint;

- constraint but readily mitigatible;

- variability in suitability within factor.

The factors which satisfied these criteria in the consultants' rankings and the major reasons for the overall ranking are listed in Table E5.3 in Appendix E. This second set of factors was defined as Level 2 constraints. The major reasons for the placement of factors within Level 2 by the site selection team were as follows:

- the physical (hydrogeologic) factors provided a second level of protection although not to the same extent as the Level 1 hydrogeologic factors;

- the physical (surface drainage) factors represented minor, mitigatible constraints;

- the biological factors represented minor constraints for which there was limited information and which could be readily confirmed in subsequent site selection stages;

- the agricultural factors represented relatively minor constraints which could be examined in greater detail in subsequent site selection stages;

- the transportation factors represented minor and mitigatible site area constraints and a transportation accident probability index which was considered relatively less favourable than the Level 1 index range; and

- the site size and configuration factors represented minor and probably mitigatible constraints to site development; a marginal site size and configuration was also considered to be a concern which could be addressed in greater detail in subsequent site selection stages.

The third step in the overall factor ranking process was to identify factors which were considered by the site selection team to represent moderate constraints to siting. Factors were considered to represent moderate constraints if they met one or more of the following criteria:

- moderate constraint;

- sufficient for comparative analysis but not generally adequate for exclusion;

- moderate constraint but potentially mitigatible; and

- insufficient information on site constraint to warrant exclusion.

The factors which satisfied these criteria in the consultants' rankings and the major reasons for the overall rankings are listed on Table E.5.4 in Appendix E. This third set of factors was defined as Level 3 constraints. The major reasons for the placement of factors within Level 3 by the site selection team were as follows:

- the physical (hydrogeologic) factors represented potential constraints based on variable conditions; the hydrogeologic data base was not considered sufficient to warrant exclusion; the data base could not be used to draw further distinctions in degrees of suitability or to determine the extent to which potential constraints might be mitigated;

- the biological factors represented moderate constraints; however, the data base which was used to identify the potential constraints was not considered sufficient to warrant site area exclusion; and

- the agricultural, social/economic, land use and transportation factors represented moderate constraints to site development; these factors were not considered sufficient for exclusion partly because of the need to consider potential constraints in greater detail and partly because of the need to explore further relative differences among site areas.

The fourth and final step in the overall factor ranking process was to identify factors which were considered by the site selection team to constitute major risks or impacts. Factors were ranked as Level 4 constraints if they met one or more of the following criteria:

- failure to provide second level of protection;

- previously defined as exclusionary (eg. SEUs) or equivalent;

- severe potential risk or impact and adequate data base (without reference to other site area ratings) to warrant site area (or portions of the site area) rejection;

- major potential risk or impact but not sufficiently severe to warrant rejection of all or part of a site area without the consideration of the other site area ratings;

- low likelihood of suitability; detailed site investigations such as drilling would be the only means of confirming lack of suitability; retention of sites with such limited prospects for suitability not considered warranted.

The factors which satisfied these criteria in the consultants' rankings and the major reasons for the overall rankings are listed in Table E.5.5 in Appendix E. This fourth set of factors was defined as Level 4 constraints. The major reasons for the placement of factors within Level 4 by the site selection team were as follows:

- the physical (hydrogeologic and surface drainage) factors failed to provide a second level of protection; these constraints were considered to be equivalent to the factors treated as exclusionary during site area identification;

- the biological, social and economic, agricultural, land use and transportation factors all represented major potential risks and impacts. In each case feature by feature interpretations were required. In some instances the severity of constraint and the level of confidence in the data base was such that all or part of a site area could be excluded. In other cases the site selection team concluded that the constraint should be viewed within the context of other site area ratings.

- the site size and configuration factor (either by itself or in combination with other exclusionary constraints) made facility development in feasible;

- in addition to the major constraints cited above, during the course of potential site identification (as additional data became available and as the existing data base was refined and extended), it was recognized that there would be site areas identified with exclusionary constraints as defined during site area identification.

Although the Level 4 ratings were all considered as potentially major risks and impacts (as in site area identification) conclusions regarding site area exclusion were only reached after considering potential implications with respect to the maintenance of siting opportunities.

9. APPLICATION OF FACTORS

9.1 FACTOR APPLICATION PROCESS

The factor application process took place in a series of four screens. The first screen - the initial suitability screen - took place at a scale of 1:50,000 using secondary source data interpreted on a site area by site area basis. The remaining three screens - the suitability screen, the compatibility screen and the systems screen took place at a scale of 1:10,000. These latter three screens employed data obtained from preliminary roadside field checks of site areas and the immediate vicinity of site areas.

The initial suitability screen focused on the exclusion of site areas on the basis of various combinations of Level 4 factors using secondary source data which were available at a 1:50,000 scale and which could be interpreted with sufficient confidence to exclude site areas or portions of site areas.

The suitability screen also employed Level 4 factors. The first part of the suitability screen (major impacts) excluded site areas or portions of site areas based on constraints which were sufficiently severe to warrant rejection of all or a portion of a site area without reference to the other ratings for the site area. In the second part of the suitability screen (relative suitability), a site area was only excluded on the basis of one or more Level 4 ratings if there was a high level of confidence in the data and it had no major offsetting benefits or the benefits were also possessed by other site areas with less severe constraints.

In the case of a large number of PI site areas in the east-central and eastern portions of the candidate areas with varying levels of suitability, the site selection team concluded that these site areas should be treated as a group and compared. In this way it was possible to use the relative differences among these sites as a basis for selecting potential sites.

The major consideration employed in the third of the four screens, the compatibility screen, was land use compatibility as represented by official plan designations. The geographic proximity of PI[1] and LF[2] site areas, as well as the nature of uses along access roads between such site areas, were the major considerations employed during the remaining screen-the system screen.

Through each of the four screens the principle of maintaining a diversity of siting opportunities was consideration in factor application. The consultants' ratings of site areas (on the basis of the four levels of suitability) were employed to address the maintenance of choice site selection principle. Thus if consideration was being given to rejecting a site because of a level 4 rating by one consultant, the opportunities which might be lost, as represented by favourable ratings by the other consultants, would be reviewed first.

The application of the four screening steps reflected the site area by site area interpretation which occurred during potential site identification. This process of individual site area interpretation had a number of implications, including the following:

- with some site areas characterized by Level 4 constraints, entire site areas were excluded; in other cases only portions of a site area were excluded;

- the site area by site area interpretation meant that the site selection team's conclusions regarding each site area took into account site-specific considerations such as the magnitude of the potentially affected feature or facility, the sensitivity, intensity of use and significance of the feature, the portion of the feature affected, physical connections to and the proximity of the feature to the site area, the treatment of the use of features in policy documents such as local official plans, the proximity of the site area to population concentrations and conflicting land uses, the level of confidence attached to the site-specific data base, and the extent to which potential effects could be avoided or substantially reduced. The site specific analysis and interpretations undertaken for each site area, in turn, meant that the site area ratings served only as a general guide in the determination of the relative and absolute suitability of site areas. The final conclusion regarding whether a site area should be retained or excluded was based on the specific data pertaining to the site rather than just on the site area ratings;

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[1] PI refers to site areas potentially suitable for the establishment of a physical chemical treatment plant and/or incinerator.

[2] LF refers to site areas potentially suitable for the establishment of a fully integrated or landfill only facility.

- the site-related roadside field checks, which were undertaken to facilitate the analysis of individual site areas, could not be undertaken using the irregular boundaries which emerged from site area identification. In order to facilitate field investigations and to ensure that major constraints in the immediate proximity of site areas were identified, Dillon's site selection staff initially provided boundaries based on roads and other readily identifiable features. These boundaries, as well as the site area boundaries are shown in the maps contained in Appendix F.

  In some cases this process led to the inclusion of areas characterized by exclusionary factors within the study area boundaries, generally around the edges. In all cases sufficient area remained in which to locate the facilities. During subsequent field checks, data were collected based on the site area boundaries which emerged following constraint mapping. Since these supplementary investigations were undertaken to resolve inconsistencies and to fill gaps, it was decided not to square off boundaries and to use the boundaries which emerged following constraint mapping. The other site selection consultants used these boundaries as the basis for their site investigations and for their ratings of site areas.

The results of the field investigations were then combined with the site area identification data to provide the basis for the site selection team's conclusions regarding individual site areas. A consistent data base was, therefore, ensured for factor application. The use of the boundaries provided by Dillon site selection, however, meant that the areas delineated for the purpose of the consultants' site areas ratings did not match completely the boundaries employed in the site selection team's final conclusions regarding the exclusion of site areas. This difference was not considered by the site selection team to represent a constraint to the potential site identification process because the consultants' site area ratings were not used to exclude site areas without reference to the supporting data for the ratings. The ratings were instead only employed as a means of structuring the factor application process and to provide the broad overview necessary to address the maintenance of choice site selection principle.

In the course of interpreting the suitability of individual site areas, when a portion of a site area was considered unsuitable the adequacy of the remaining portion was analyzed. Part of this analysis included the consideration of whether the boundary of a site area could be extended outward in one or more directions in such a manner that a site area of adequate size and shape could be delineated. Where there was any doubt by the site selection team regarding the potential suitability of a site area it was retained for further consideration.

Each of the four screens is described in the sections which follow. A more detailed description of the reasons why each of the rejected site areas were dropped from further consideration is provided in Appendix F.

9.2 INITIAL SUITABILITY SCREEN

The major reasons for the exclusions which occurred with the application of the Level 4 constraints data (at a scale of 1:50,000) are summarized below.

9.2.1 Reasons For Exclusion

(a) Site Size and Configuration

As part of the initial suitability screen a re-examination of the size and configuration of each site area was undertaken by the Dillon site selection staff. The analysis included the possibility of locating the operations portion of the facility (in the case of the PIs) in the unconstrained areas with the sensitive uses or features being retained within the buffer area portion of the site area.

In three instances - PI-3W, PI-22E and PI-28E - the more detailed scrutiny of boundaries revealed inadequate site sizes and configurations. As described in Appendix F in all three cases the site areas were far too small and/or irregular in configuration. It was determined by the site selection team that there was insufficient leeway for extending boundaries because of direct conflicts with areas or features which had been determined to be exclusionary at the site area identification stage.

Site size and configuration considerations were also used in conjunction with other considerations throughout the potential site identification process. Thus if a major constraint resulted in the exclusion of a portion of a site area, the remaining portion of the site area was reviewed in terms of its adequacy with respect to site size and configuration.

(b) Transportation and Utilities

A further set of potential site identification factors used in the initial suitability screen pertained to the constraints to site development posed by the severance of a site area by major transportation and utility facilities such as provincial highways, regional roads and railways. Only facilities which would be extremely difficult to relocate or re-align as determined by Dillon's transportation and engineering staff were considered.

The potential for increasing the site size by extending the boundaries of site areas in various directions was considered. The placement of the operations areas of the facility, in the case of the PI site areas, in a manner such that the facilities would be retained as a buffer area use was also considered. Major roads were not considered a suitable buffer area use as it would not be possible to restrict public access within the buffer area. The extent to which other utilities such as pipelines and transmission lines posed constraints to site development was considered on a site area by site area basis.

The analysis of these facilities served in some cases to reduce the size of site areas. The remaining parcels were examined with respect to their conformity to the site size requirements. Site areas which were clearly too small were eliminated from further consideration. Where there was any doubt concerning the adequacy of site size and configuration the site area was retained for further consideration.

As described in Appendix F a total of four site areas were considered unsuitable because of conflicts with major transportation and utility facilities. These unsuitable site areas were the following: LF-5N, LF-11C, PI-7N and PI-36E.

(c) Significant Environmental Units

Significant environmental units (SEUs) (as identified by various provincial and municipal agencies and as documented by Gartner Lee Associates Ltd.) were not treated as exclusionary in the identification of site areas because of the variability in the relative significance and sensitivity of SEUs. The SEU factor was used by the site selection team at the site area screening stage as suitability could be interpreted on a site area by site area basis. In addition, the significance of Carolinian vegetation widely distributed in the Niagara Peninsula had been confirmed by the site area screening stage. Each SEU occurring within or adjacent to one of the remaining site areas was reviewed. An SEU was considered to be significant or sensitive if site development would have resulted in significant natural environmental impacts.

Consideration was also given (in the case of the PI site areas) by Dillon's site selection staff to placing the operations area in the unconstrained portions of the site area and to retaining the SEU within the buffer area portion of the site. In some cases this was acknowledged to represent sufficient grounds for retaining the site area for further consideration. In other cases, however, the SEU was considered sufficiently sensitive by Gartner Lee Associates Ltd., that the displacement of substantial portions of the SEU was expected to have significant impacts.

Based on these interpretations of potential natural environmental impacts several site areas were eliminated from further consideration or reduced in size by the site selection team. Site areas were retained where only a small portion of a site area would be affected, where the impacts were uncertain, or where the facility could be sited such that major impacts could potentially be avoided or appreciably reduced. The remaining portions of site areas not affected by the SEUs were then examined in terms of adequacy for site size and configuration. As described more fully in Appendix F consideration was also given to extending the boundaries of site areas. Where there was any doubt regarding the adequacy of site size and configuration, the site area was retained.

A total of ten site areas were considered unsuitable primarily because of serious and direct conflicts with SEUs. Those SEUs present in each site area are listed in Appendix F.

The site areas which were determined by the site selection team to be unsuitable exclusively as a result of SEUs were the following:

LF-14C
LF-21C
LF-23C
PI-8C
PI-10C
PI-12C
PI-14C
PI-20C
PI-24C
PI-35E

(d) Confirmation of Exclusionary Factors

The process of identifying site areas led in some instances to some uncertainty regarding whether particular areas were or were not subject to exclusionary factors. This uncertainty partly stemmed from the approximate nature of boundaries when applying factors at a scale of 1:50,000. In the case of the agricultural factors it was also a consequence of refinements in agricultural mapping which were taking place during site area identification. Where there was any doubt regarding the potential suitability of a site area, it was retained for further consideration during potential site identification.

During potential site identification the potential suitability of these site areas was interpreted on a site area by site area basis. Boundaries and features were revised for individual site areas using updated and refined data maps. The outcome of this process was the identification of a further seven unsuitable site areas by the site selection team. In two cases (LF-1W and PI-6W) the primary reason for considering these areas unsuitable was agricultural constraints as identified by Ecologistics Ltd. For the remaining five site areas, the reasons for unsuitability were a combination of agricultural constraints and other exclusionary factors (See Appendix F).

Where portions of site areas remained which were unconstrained they were examined. Consideration was given to the placement of the operations portion of a PI site area in an effort to retain such site areas for further analysis. The potential for extending boundaries outward in order to meet the minimum site size requirements was also considered.

The site areas which were dropped from further consideration by the site selection team as a result of this analysis were the following:

LF-1W PI-1W
LF-6W PI-6W
LF-8W
LF-9W
LF-16C

e) Combinations of Site Size and Configurations and/or Transportation and Utility Factors and/or Significant Environmental Unit Factors

In a great many instances the limitations associated with particular site areas pertained to more than one initial suitability screening consideration. These combined limitations resulted in the elimination of several site areas from further consideration. Residual potentially suitable areas were reviewed in terms of the potential for extending boundaries. The potential for retaining PI site areas was also reviewed in terms of the placement of the operations area of the facility. The residual areas which remained after the constrained portions of the site area were excluded were then reviewed in terms of their adequacy with respect to site size and configuration. Where there was any doubt, site areas were retained for further consideration.

A total of twenty-two site areas were considered unsuitable by the site selection team based on a combination of transportation, utility and SEU constraints. These unsuitable site areas were:

LF-4C
LF-5C
LF-6C
LF-7C
LF-10C
LF-17C
LF-19C
LF-20C
LF-22C
LF-27C
LF-5E
PI-4C
PI-5C
PI-6C
PI-7C
PI-9C
PI-13C
PI-16C
PI-17C
PI-23C
PI-23E
PI-32E

A further two site areas were considered unsuitable by the site selection team because of a combination of SEU, transportation and utility facilities, proximity to rural residential clusters (a factor defined as exclusionary in site area identification) and physical features. These unsuitable site areas were LF-28C and PI-18C.

Six site areas were considered to be unsuitable because of a combination of SEU, transportation and utility facilities and physical features. These site areas were LF-26C, PI-3C, LF-11E, PI-24E, PI-29E and PI-33E.

Four site areas were considered to be unsuitable by the site selection team because of a combination of transportation and utility facilities and physical features. These site areas were PI-8N, PI-9N, LF-31C and LF-32C.

Four additional site areas (LF-12W, PI-4W, PI-5W and PI-25E) were considered unsuitable because of various combinations of constraints, as described below:

LF-12W - crossed by a stream course; insufficient site size.

PI-4W - residential area partially within the site area boundaries; proximity to Hamilton Civic Airport; crossed by an oil pipeline, a hydro line, and a stream course.

PI-5W - conflict with SEU 7-1; crossed by a stream course.

PI-25E - conflict with SEU 13-8; crossed by an oil pipeline; adjacent to a residential area.

In all cases the remaining site area was examined to determine whether site size and configuration requirements were met.

At the end of the initial suitability screen 90 site areas (38 LF and 52 PI site areas) remained. A more detailed description of the reasons for excluding 62 site areas (27 LF and 35 PI site areas) during the Initial Suitability Screen is provided in Appendix F.

In terms of the maintenance of choice site selection principle, the reasons for excluding site areas during initial suitability screening were such that more detailed analysis could not be expected to enhance the absolute or relative suitability of those site areas. It was also recognized that further severe absolute constraints would be identified once the 1:10,000 scale analysis had been completed. It was, therefore, concluded by the site selection team that it would not be appropriate to modify the application of factors to maintain a diversity of siting options until the point in the site selection process when relative differences among siting options were being considered.

9.3 SUITABILITY SCREEN

9.3.1 Suitability Screening Process

The suitability screen involved the review of the remaining 90 site areas. This analysis was undertaken at a scale of 1:10,000. It employed a review and refinement of site area identification data as well as supplementary data obtained by other site selection consultants, including roadside field investigations, of each potential site area.

The suitability screen was divided into two steps - severe impacts and relative suitability. The severe impacts analysis involved the consideration of those site areas which contained constraints which were considered by the site selection team as sufficient by themselves to exclude all or part of a site area. In some instances these constraints encompassed the entire site area and the entire site area was excluded. In other cases only a portion of the site area was affected by one or more severe constraints, but the remaining portion of the site area was determined by Dillon's site selection staff to possess too small an area or too irregular a configuration for facility development. If the remaining portion of the site area was large enough to permit the establishment of a facility the site area was retained for more detailed consideration. Where there was any doubt site areas were retained for more detailed consideration.

The second part of the suitability screen, relative suitability, was a comparative analysis of the remaining site areas. This comparative analysis focused on site areas which possessed Level 4 constraints which by themselves were not considered sufficient to warrant site area rejection. A site area was excluded by the site selection team during this step only if it possessed one or more major constraints, a high level of confidence in the data, and not major offsetting benefits or the benefits were also possessed by other site areas with less severe constraints.

9.3.2 Severe Impacts

The application of the Level 4 factors at the suitability screening stage involved site area by site area interpretations by each of the other site selection consultants based on air photo interpretation, secondary source analysis and reconnaissance (roadside) field checks. The reconnaissance (roadside) field checks were undertaken by specialists in the fields of agriculture, hydrogeology, hydrology, biology, land use planning, social and economic analysis and transportation and utilities. These investigations were undertaken on the basis of site area boundaries provided by Dillon. With some site areas the additional analysis served to confirm previously identified constraints. In other cases new Level 4 constraints were identified.

The suitability screening analysis led in some instances, to all or part of site areas being considered unsuitable on the basis of a single factor. In other cases a combination of factors served to eliminate one or more site areas.

Where there was any doubt regarding the suitability or the adequacy of site sizes, site areas were retained for further analysis. Consideration was also given by the site selection team to extending boundaries to satisfy the minimum site size as well as to the placement of the operations portion of the incinerator-physical/chemical treatment plant facilities within the site area.

The data obtained by the other site selection consultants during potential site area identification were used by the site selection team to determine the severity of constraint posed by the Level 4 constraints. The data obtained by the other site selection consultants during site area identification were used to address the question of whether site area boundaries could be extended outward to meet the minimum site size requirements.

As highlighted in Table 9.1 a total of 45 site areas were considered unsuitable based on various combinations of Level 4 severe constraints. A summary highlighting the major reasons why site areas were deemed by the site selection team to be unsuitable is provided in Appendix F.

As in initial suitability screening, the reasons why site areas were eliminated during the severe impact analysis were such that more detailed analysis would not be expected to enhance the absolute or relative suitability of the site areas. It was, therefore, not considered appropriate by the site selection team to consider modifying the application of the factors to maintain a diversity of siting choices with respect to major tradeoffs or factors not addressed at this stage. Having completed two levels of analysis based on constraints which were sufficient by themselves or in combination to exclude site areas, it was considered advisable by the site selection team to review the diversity of siting choices remaining before proceeding to the exploration of the means of excluding site areas on the basis of relative differences.

With respect to major tradeoffs, site area ratings prepared by each of the other site selection consultants were considered an appropriate means of addressing the diversity of choice issue. The consultants' ratings for the site areas which remained after the suitability screen are indicated on Tables 9.2 and 9.3. The ratings are based on the study area boundaries used by the consultants during their field investigations. After reviewing Tables 9.2 and 9.3 the following patterns were evident to the site selection team:

TABLE 9.1
SUITABILITY SCREEN - REASONS FOR EXCLUSION[1]

Site Area	Site Size & Configuration	Agriculture	Biology	Surface Drainage	Natural Containment	Land Use	Social (Comm. & Rec.Fac.)	Transp. & Util.
LF-1A1	0[2]	-	-	-	-	0	-	-
LF-2A1	0	-	-	-	-	-	0	0
LF-IN	0	-	-	0	-	-	-	0
LF-3N	0	-	-	0	-	-	-	0
LF-2W	0	-	-	0	0	-	0	-
LF-3W	0	0	-	0	0	0	-	-
LF-4W	0	-	-	0	-	0	-	0
LF-5W	0	-	-	0	-	-	-	0
LF-7W	0	0	-	0	-	-	-	-
LF-13W	0	-	0	0	0	-	-	-
LF-14W	0	-	-	0	-	-	-	-
LF-12C	0	0	0	0	-	-	-	0
LF-13C	0	-	0	-	-	-	-	0
LF-18C	0	-	-	0	-	-	-	0
LF-24C	0	-	-	0	-	-	-	0
LF-25C	0	-	-	0	-	0	-	0
LF-29C	0	-	-	0	-	-	-	-
LF-30C	0	-	-	0	-	-	-	-
LF-2E	0	-	0	-	0	-	-	0
LF-4E	0	0	0	0	-	-	-	0
LF-6E	0	-	0	-	0	-	0	0

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[1] The reasons for exclusion highlighted in this table represent a combination of data obtained during the initial suitability screen analysis as well as a result of the supplementary investigations undertaken during the screening analysis.

[2] 0 Refers to a constraint which alone or in combination led to the exclusion of a site area.

TABLE 9.1 (cont'd)
SUITABILITY SCREEN - REASONS FOR EXCLUSION[1]

Site Area	Site Size & Configuration	Agriculture	Biology	Surface Drainage	Natural Containment	Land Use	Social (Comm. & Rec.Fac.)	Transp. & Util.
LF-7E	0[2]	-	-	-	0	0	0	0
LF-8E	0	-	-	-	0	-	0	0
LF-9E	0	-	0	0	-	-	-	0
LF-10E	0	-	0	0	-	-	-	0
LF-12E	0	0	0	0	-	-	-	-
PI-3N	-	-	-	0	0	-	-	0
PI-4N	-	-	-	0	0	-	-	0
PI-5N	-	-	-	0	0	-	-	0
PI-6N	-	-	-	0	-	-	-	0
PI-11N	0	-	-	0	-	0	-	0
PI-12N	0	-	-	0	-	0	-	0
PI-15N	-	-	-	0	0	0	0	0
PI-1C	-	-	-	-	-	0	0	-
PI-2C	0	-	0	-	-	0	-	-
PI-11C	0	-	0	-	-	0	-	0
PI-25C	0	0	-	0	-	-	-	0
PI-3E	0	-	0	0	0	0	0	0
PI-7E	0	-	0	-	-	-	-	0
PI-8E	0	-	-	0	-	-	-	0
PI-15E	0	-	-	-	-	0	0	-
PI-19E	0	-	-	-	0	-	-	0

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[1] The reasons for exclusion highlighted in this table represent a combination of data obtained during the initial suitability screen analysis as well as a result of the supplementary investigations undertaken during the screening analysis.

[2] 0 Refers to a constraint which alone or in combination led to the exclusion of a site area.

TABLE 9.1 (cont'd)
SUITABILITY SCREEN - REASONS FOR EXCLUSION[1]

Site Area	Site Size & Configuration	Agriculture	Biology	Surface Drainage	Natural Containment	Land Use	Social (Comm. & Rec.Fac.)	Transp. & Util.
PI-30E	0[2]	-	0	0	-	-	0	0
PI-34E	0	-	-	-	0	0	0	0
PI-37E	0	-	0	0	-	-	-	0

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[1] The reasons for exclusion highlighted in this table represent a combination of data obtained during the initial suitability screen analysis as well as a result of the supplementary investigations undertaken during the screening analysis.

[2] 0 Refers to a constraint which alone or in combination led to the exclusion of a site area.

TABLE 9.2

OVERALL SITE AREA RATINGS - LANDFILL SITE AREAS REMAINING AFTER SEVERE IMPACT SUITABILITY SCREEN[1]

Site area	Natural Containment	Land Use	Social	Transportation Accident Index	Agriculture	Biology	Surface Drainage
LF-2N	3	1	3	1	1	1	2
LF-4N	2	3	1	1	4	2	2
LF-10W	3	1	1	2	3	4	4
LF-11W	3	3	3	2	3	3	4
LF-1C	1	1	1	2	1	4	2
LF-2C	1	4	3	4	4	2	2
LF-3C	2	3	3	4	4	3	2
LF-8C	1	3	3	3	4	3	2
LF-9C	1	3	1	3	4	2	4
LF-15C	1	4	3	4	3	4	2
LF-1E	2	3	1	2	2	4	4
LF-3E	2	1	3	2	1	4	4

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[1] The numbers 1 to 4 correspond to the 4 overall rating levels ranging from the most favourable (Level 1) to the least favourable (Level 4).

TABLE 9.3

OVERALL SITE AREA RATINGS - INCINERATOR/PHYSICAL CHEMICAL TREATMENT PLANT SITE AREAS REMAINING AFTER SEVERE IMPACT SUITABILITY SCREEN[1]

Site area	Natural Contain- ment	Land Use	Social	Transpor- tation Accident Index	Agri- culture	Biology	Surface Drainage
P1-1A1	3	1	1	1	1	1	2
P1-2A1	3	3	1	1	1	1	4
P1-3A1	3	4	4	1	2	3	4
P1-1N	1	3	1	1	2	2	1
P1-2N	2	3	1	1	2	1	2
P1-10N	2	3	1	1	4	2	4
P1-13N	2	3	1	1	4	4	2
P1-14N	2	3	3	1	1	3	4
P1-2W	3	1	4	2	1	2	4
P1-15C	2	4	1	4	1	3	2
P1-19C	3	4	1	2	4	4	4
P1-21C	1	3	1	3	4	3	2
P1-22C	2	4	4	3	4	3	2
P1-26C	1	3	1	4	4	3	2
P1-1E	4	3	4	2	1	4	2
P1-2E	4	3	4	2	1	4	2
P1-4E	2	1	3	2	1	1	4
P1-5E	2	3	4	2	1	3	2
P1-6E	4	3	3	2	2	4	4
P1-9E	2	3	4	2	3	4	2
P1-10E	2	4	4	2	2	3	2
P1-11E	2	4	4	2	1	3	2
P1-12E	2	3	4	2	2	2	4
P1-13E	2	3	1	2	2	2	2

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[1] The number 1 to 4 correspond to the 4 overall rating levels ranging from the most favourable (Level 1) to the least favourable (Level 4).

TABLE 9.3 (cont'd)

OVERALL SITE AREA RATINGS - INCINERATOR/PHYSICAL CHEMICAL TREATMENT PLANT SITE AREAS REMAINING AFTER SEVERE IMPACT SUITABILITY SCREEN[1]

Site area	Natural Containment	Land Use	Social	Transportation Accident Index	Agriculture	Biology	Surface Drainage
P1-14E	4	3	4	2	2	4	4
P1-16E	2	3	4	2	2	4	1
P1-17E	4	1	1	2	2	2	1
P1-18E	4	1	1	2	1	2	2
P1-20E	2	3	1	2	1	2	1
P1-21E	4	1	4	2	1	1	2
P1-26E	1	3	3	2	2	4	4
P1-27E	1	1	3	2	1	2	4
P1-31E	2	4	4	2	2	3	4

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[1] The numbers 1 to 4 correspond to the 4 overall rating levels ranging from the most favourable (Level 1) to the least favourable (Level 4).

- there appeared to be an adequate number of landfill/integrated site areas (9) each with favourable (Levels 1 or 2) natural containment and surface drainage ratings - only one of these site areas (in the area of natural containment) is located in the area with the highest rating with respect to transportation;

- there were no landfill/integrated site areas with favourable natural containment or surface drainage ratings in the western portion of the Niagara Peninsula (an area at transportation Level 2);

- there appeared to be an adequate number of PI site areas (21) and (20) with favourable natural containment and surface drainage rating. Levels 1 or 2; only five and four of these site areas have transportation accident probability index of Level 1; there is only one PI site remaining in the western portion of the Niagara Peninsula;

- only four landfill site areas remained which were rated in the most suitable land use category; all but two of the balance of the landfill site areas are in the moderately suitable land use category;

- there appeared to be an adequate number of PI site areas (7) in the most suitable land use category; only one of these site areas is located in the most accessible portions of the candidate areas (transportation accident probability index of 1) and only one site area is located in the western portion of the Niagara Peninsula;

- there appeared to be an adequate number of landfill site areas (5) in the most suitable category with respect to social impacts; however, only one of these site areas is located in the most accessible portion of the candidate areas;

- there appeared to be an adequate range of PI site areas (14) in the most suitable social impact category;

- a total of seven landfill site areas are located in the top two transportation accident probability index levels; only two of these site areas are located in the top category.

- there appeared to be an adequate range of PI site areas with respect to the transportation accident probability index;

- there was some uncertainty regarding whether there was an adequate range of landfill site areas with favourable agricultural ratings 1 and 2 - a total of four;

- there appeared to be an adequate range of PI site areas with respect to agricultural suitability;

- there appeared to be an adequate range of landfill and PI site areas in terms of biological suitability.

On the basis of these patterns the site selection team concluded that there appeared to be an adequate range of PI and landfill site areas of varying suitability for different siting considerations to proceed to the next screen. It was also, however, recognized that the range of choices in the most accessible portions of the candidate areas and for the siting of landfill/fully integrated facilities was quite limited. It was also recognized by the site selection team that new issues and constraints would influence the relative and absolute suitability of site areas with more detailed analysis and as new factors were introduced into the process. It was, therefore, determined that the remaining site areas would have to be scrutinized especially carefully (particularly with respect to landfills and for the most accessible PIs). Where there was any doubt regarding the potential suitability of site areas it was determined that these site areas should be retained for further consideration.

9.3.3 Relative Suitability

The second part of the suitability screen was a comparison of the relative suitability of the remaining site areas with Level 4 constraints. This comparison of site areas involved a review of the differences in ratings among the site areas by the site selection team. This comparative analysis took into account a number of concerns including the following:

- the level of confidence associated with the data base, e.g. was it composed of regional data or site-specific data generated through roadside field checks?;
- the tradeoffs between factors, e.g. transportation Level 1 as against agriculture Level 4;
- the severity of the potential impacts;
- the potential for avoiding or significantly reducing potential impacts;
- tradeoffs among site areas, e.g. if the site area was rejected were there other site areas retained with comparable advantages but less severe disadvantages?

The process began by focussing on the remaining site areas which possessed major (Level 4) constraints. Because of the need to retain a diversity of siting choices for subsequent stages the general approach taken by the site selection team was to limit the exclusion of site areas to those site areas with major, non-mitigatible impacts and no offsetting benefits. A site area was, therefore, rejected only if it were subject to all of the following conditions:

- one or more major constraints;

- high level of confidence in the data;

- no major offsetting benefits or benefits also possessed by other site areas with less severe constraints.

A summary of the treatment of each of the site areas considered in the relative suitability analysis is provided in Table E5.6 in Appendix E and is highlighted below.

With respect to landfills the only site areas which appeared to be subject to these criteria were LF-2C and LF-15C. In the case of LF-2C the site area was rated as having major land use, transportation accident probability index and agricultural constraints. These ratings stemmed from the close proximity of the site area to the community of Wainfleet and the site area's relatively remote location. The two positive ratings which were ascribed to the site area (natural containment and biology) were, in the view of the site selection team, possessed by an adequate range of landfill/integrated site areas which did not possess constraints comparable to those associated with LF-2C.

LF-15C was rated as having major land use, transportation and biological constraints. The ratings were the result of a large number of SEUs and residential clusters within the site area. LF-15C received only one Level 1 rating - natural containment. The site selection team concluded that an adequate range of site areas remained which had comparable physical resource conditions but did not have disadvantages comparable to those associated with LF-15C.

The remaining landfill site areas all appeared to contain a sufficient balance of siting advantages and disadvantages that more detailed consideration would be required of a broader range of siting constraints and opportunities before firm conclusions could be reached.

In terms of the PI site areas north of Lake Ontario, four site areas - PI-2A1, PI-3A1, PI-10N and PI-13N received Level 4 ratings. With respect to PI-2A1 the site size (particularly in combination with the adjacent site PI-1A1) was considered large enough to avoid the major drainage constraint identified. In the case of PI-3A1 the major social and land use constraints identified stemmed from a secondary school and recreation complex within the site area and a church (under construction) on the border of the site area. In addition, the site area is designated rural and has a major surface drainage constraint. After reviewing the constraints associated with PI-3A1 and comparing these constraints with those possessed by other PI sites in the same general area, the site selection team concluded that there were an adequate range of site areas retained with similar advantages to PI-3A1 but with less severe disadvantages.

In terms of PI-10N, the major constraints identified with the site area were agriculture and surface drainage. Although the surface drainage constraint was potentially avoidable, after comparing the characteristics of PI-10N with those possessed by other PI site areas in the same area, the site selection team concluded that there were other site areas in the same vicinity with more favourable agricultural characteristics, e.g. urban shadow, industrial designations and comparable advantages to PI-10N.

PI-13N received a Level 4 biological rating because a portion of the Oakville (Sixteen Mile) Creek Valley SEU appears to cross the southeastern edge of the site. PI-14N received a Level 4 surface drainage constraint rating. However, through the placement of the operations area, together with the consolidation of PI-13N with PI-14N, it appeared to be possible to ensure minimal adverse impacts on the ecological resources of the valley and to avoid the surface drainage constraint. The site selection team, therefore, decided to retain PI-13N for further consideration.

No other PI sites north of Lake Ontario were indicated as possessing major constraints. All of these remaining site areas were therefore retained for further consideration.

PI-2W received one Level 4 rating (social) because of the proximity of the site area to residential areas at the edge of the site. It also received a Level 4 surface drainage rating. The surface drainage constraint appeared to be avoidable. However, because PI-2W is industrially designated and because the site is the only PI site area in the western portion of the Niagara Peninsula the site selection team decided to retain the site area for further consideration.

PI-15C received three Level 4 ratings - land use, transportation and agriculture. These ratings stemmed from the close proximity of the site area to Wainfleet and sensitive crops as well as its very indirect access from a Highway 400 series highway. After reviewing the site area's characteristics the site selection team concluded that the site area possessed major relative disadvantages and no advantages which were not possessed by a range of other site areas.

After reviewing the characteristics of the remaining PI site areas in the east-central and eastern portions of the candidate areas with varying levels of suitability, the site selection team concluded that these site areas should be treated as a group and compared. This conclusion was based on the recognition that, with a large number of PIs in the same general vicinity, it would be possible to focus on the relative difference among the PIs to minimize potential risks, impacts and costs. This conclusion also reflected the need to consider the relationship of PIs to the landfill sites which still remained to this point. The treatment of these remaining PI site areas is described in the sections which follow.

9.4 COMPATIBILITY SCREEN

The screening process to this point had reduced the number of potential landfill/integrated site areas to ten. The constraints associated with these remaining landfill/integrated sites were not considered by the site selection team sufficient to warrant rejection based on the level of information available. It was also felt important by the site selection team to maintain a diversity of siting choices for subsequent stages, especially for site areas which offered the potential for the preferred facility arrangement - a fully integrated facility.

The site selection team did, however, conclude that the potential for further reducing the number of PI site areas remained. The approach which was taken by the site selection team to the further screening of PIs was based on the recognition that:

- a physical/chemical treatment plant and an incinerator possess many of the characteristics of medium to heavy industrial areas;
- a preference for locating these facilities in industrial locations was expressed through the public consultation program;
- the importance of minimizing agricultural impacts was also stressed in the Phase 3 public consultation program;
- the desirability for minimizing transportation risks, impacts and costs by minimizing the distance and sensitive uses between facility components;
- the general preference for the fully integrated facility arrangement over a partially integrated facility arrangement.

In light of these considerations the site selection team concluded that:

- PIs would be grouped on the basis of their geographic proximity to landfills;
- a separate incinerator-physical/chemical treatment plant would only be considered if it would result in an appreciable reduction in agricultural impacts and/or a landfill site could not be developed as a fully integrated site (for example, if proximity to an airport imposed unacceptable height restrictions on the incinerator stack);

- preference would be given to industrial PI sites. The general order of priority established was as follows - heavy industrial locations, medium industrial locations, light industrial locations, urban shadow locations, agricultural sites with agricultural ratings lower than those of nearby landfill site areas, agricultural sites with comparable agricultural ratings to those of nearby landfill site areas. The final priority was based on the understanding that access road impacts could be minimized, the landfill site area could not be developed for fully integrated purposes, and there were no PI site areas in the area with less severe agricultural impacts.

The first step in this process was the geographic grouping by the site selection team of the remaining PIs in relation to the remaining landfill sites. The groupings were developed as specified in Table 9.4.

After reviewing these relationships the site selection team concluded the following:

- the number of PI site areas which could be associated with LF-2N and LF-4N was quite limited. The number of PI site areas listed also tended to overstate the number of siting choices available. PI-1A1-PI-2A1, PI-1N-PI-2N, and PI-13N-PI-14N are all abutting site areas. In view of the site-specific constraints which might be identified in subsequent stages it was decided by the site selection team to view these adjacent site areas as single site areas - PI-1A1, PI-1N and PI-13N respectively.

- One of the northern PI site areas (PI-1A1) is industrially designated, one is in an urban shadow area (PI-1N) and one is largely publicly owned (PI-13N). As LF-2N was not suitable for an incinerator because of its proximity to Pearson International Airport and LF-4N was potentially constrained with respect to the establishment of an incinerator because of its proximity to the Niagara Escarpment, it was recognized that PI site areas would be required, preferably as close to LF-2N and LF-4N as possible. It was, therefore, concluded by the site selection team that all three PIs should be retained.

TABLE 9.4

GEOGRAPHIC GROUPING OF PI SITE AREAS

Landfill/Integrated Site Areas	PI Site Areas
LF-2N	PI-1A1, PI-2A1, PI-1N, PI-2N, PI-13N, PI-14N
LF-4N	PI-1A1, PI-2A1, PI-1N, PI-2N, PI-13N, PI-14N, PI-2W
LF-10W	PI-2W, PI-1N, PI-2N, PI-13N, PI-14N, PI-19C, PI-21C, PI-22C, PI-26C
LF-11W	PI-2W, PI-1N, PI-2N, PI-13N, PI-14W, PI-19C, PI-21C, PI-22C, PI-26C
LF-1C	PI-19C, PI-21C, PI-22C, PI-26C, PI-17E, PI-18E, PI-21E, PI-20E
LF-3C	PI-19C, PI-21C, PI-22C
LF-8C	PI-19C, PI-21C, PI-22C, PI-26C
LF-9C	PI-19C, PI-21C, PI-22C, PI-26C
LF-1E	PI-1E, PI-2E, PI-4E, PI-5E, PI-6E, PI-9E,PI-10E PI-11E, PI-12E, PI-13E, PI-14E, PI-16E, PI-27E, PI-31E
LF-3E	PI-1E, PI-2E, PI-4E, PI-5E, PI-9E, PI-10E, PI-11E, PI-12E, PI-13E, PI-14E, PI-16E, PI-26E, PI-27E, PI-31E

- PI-2W is the only remaining site area in close proximity to LF-10W and LF-11W. PI-2W is also located such that it could be employed in conjunction with LF-4N. As an industrially designated site area, PI-2W offered the potential for reducing the agricultural impacts associated with LF-10W, LF-11W and LF-4N. It was, therefore considered desirable by the site selection team to retain PI-2W for further consideration.

- PIs 19C, 21C, 22C and 26C are all designated for agricultural purposes in local and regional official plans. All four sites also had poor ratings with respect to agricultural impacts. In addition no constraints had been identified with respect to the three central landfills (LF-3C, LF-8C, LF-9C) which would have necessitated separating the incinerator and physical/chemical treatment plant components.

  It was, therefore, concluded by the site selection team, that the use of PIs 19C, 21C, 22C and 26C in association with LF-3C, LF-8C and LF-9C offered no relative advantages to the development of the three landfill site areas as fully integrated sites. Rather than reducing agricultural impacts it was concluded by the site selection team, that the use of the five PIs would increase the displacement of agricultural uses and potential interference with agricultural operations. In light of the considerations stated above it was, therefore, concluded by the site selection team that PIs 19C, 21C, 22C and 26C in association with LF-3C, LF-8C or LF-9C should be dropped from further consideration.

- The review of the characteristics of the PIs (PI-19C, PI-21C, PI-22C, PI-26C, PI-17E, PI-18E, PI-20E and PI-21E) which could be developed in association with LF-1C - revealed that PIs 19C, 21C, 22C and 26C have Rural Official Plan designations and PIs 17E, 20E and 21E have Rural, Agricultural and Industrial, and Industrial Official Plan designations respectively. PI-17E is adjacent to a Heavy Industrial designation and is not developed. PI-20E includes an existing industrial use. PI-18E has a Heavy Industrial designation. The only portion of PI-20E which is designated industrial is the existing industrial use. The undeveloped balance of the site is designated Agricultural.

The only potential major constraint associated with PI-18E is the presence of a spoil pile covering part of the site. The remaining portion of the site area has a Level 1 physical resource rating. It was determined that the operations area of the facility could be placed in the portion of the PI-18E which has the Level 1 physical resource rating.

In view of the relative land use advantages of PI-18E over PI-19C, PI-21C, PI-22C, PI-26C, PI-17E, PI-20E and PI-21E, as well as the absence of any apparent offsetting disadvantages, it was therefore concluded by the site selection team that PI-18E would be retained and that PIs 19C, 21C, 22C, 17E, 20E and 21E would be dropped from further consideration.

- As previously indicated, a large number of PI site areas could potentially be developed in association with LF-1E and LF-3E. Only six of these PIs are partially or completely designated for industrial purposes - PI-1E, PI-2E, PI-4E, PI-5E, PI-11E and PI27E. The remaining site areas (PI-6E, PI-9E, PI-10E, PI-12E, PI-13E, PI-14E, PI-16E, PI-26E and PI-31E) are designated Agricultural, Rural or Open Space in local and regional official plans. In addition PI-6E (biology and surface drainage), PI-9E (social and biology), PI-10E (land use and social), PI-12E (social and surface drainage), PI-14E (natural containment and surface drainage, social and biology), PI-16E (biology and social), PI-26E (biology and surface drainage) and PI-31E (land use, social and surface drainage) all have major constraint ratings.

- In view of the availability of industrially designated PIs, as well as the major constraints identified, it was therefore concluded by the site selection team that PI-6E, PI-9E, PI-10E, PI-12E, PI-13E, PI-14E, PI-16E, PI-26E and PI-31E should be dropped from further consideration.

- In the case of PI-11E only a small portion of the site area is designated Industrial. The balance of the site area is designated Rural and Open Space. In addition, major land use and social constraints had been identified within PI-11E, as a result of its close proximity to the communities of Stevensville and Synder. It was, therefore, concluded by the site selection team that PI-11E should be dropped from further consideration.

- It was decided by the site selection team to review the remaining industrially designated PI site areas (PI-1E, PI-2E, PI-4E, PI-5E and PI-27E) in greater detail. It was concluded by the site selection team that particular consideration would be given to the constraints associated with each of the remaining site areas, as well as to the ease of access (and potential impacts) between the PI site areas and LF-1E and LF-3E.

9.5 SYSTEMS SCREEN

As previously indicated, PI-1E, PI-2E, PI-4E, PI-5E and PI-27E are all industrially designated. Two of these sites were identified as having three major Level 4 constraints - PI-1E (physical resources, social, biology) and PI-2E (physical resources, biology, social). Two sites, PI-5E and PI-4E were identified as having one major Level 4 constraints - social and surface drainage respectively. Sites PI-4E and PI-27E were identified as having moderate social constraints.

In terms of ease of access to LF-1E and LF-3E, PI-27E is more directly accessible with fewer potential access road impacts to the two landfill sites than the balance of the PI site areas. It was, therefore, concluded by the site selection team, that PI-27E should be retained and PI-1E, PI-2E, PI-4E and PI-5E should be dropped from further consideration.

9.6 CONCLUSIONS AND RESULTS

The preceding analysis reduced the number of potential site areas to 16 from 152 site areas. Five of these site areas (LF-10W, LF-11W, LF-4N, LF-1E and LF-3E) were considered potentially suitable for either landfills or fully integrated facilities. However, it was recognized that one of these site areas, LF-4N, might not be suitable for an incinerator because of its proximity to the Niagara Escarpment. It was decided by OWMC that the potential suitability of LF-4N for fully integrated facilities should be explored in greater detail as part of the candidate site identification process. The site selection team concurred with this decision. The decision to consider LF-4N further as an integrated site reflected the desire to minimize agricultural impacts, the regional nature of the Phase 3A air dispersion analysis, and the physical resources and transportation advantages associated with LF-4N. As this decision represented a modification of an Interim Phase 3 decision, all other areas affected by air dispersion constraints as well as other regional data bases were reviewed by Dillon's site selection staff to determine if a comparable conclusion would result in the identification of any further sites. No further sites were identified as a result of this process.

Two potential sites were considered suitable only for a landfill or a landfill in association with a physical/chemical treatment plant: LF-1C and LF-2N. Three sites were considered suitable only for fully integrated facilities (LF-3C, LF-8C, LF-9C). It was, however, recognized by the site selection team, that if a serious limitation was identified for LF-3C, LF-8C or LF-9C (which precluded the establishment of the incinerator or the physical/chemical treatment plant facility components) there would be a need to consider the potential for a partially integrated facility at those sites. It was acknowledged by the site selection team that such an analysis would necessitate the consideration of the remaining PI site areas as well as the reconsideration of previously rejected PIs.

Six potential site areas (PI-1A1, PI-1N, PI-13N, PI-2W, PI-18E, PI-27E) were considered suitable for an incinerator or an incinerator in conjunction with a physical/chemical treatment plant. The rationale for these distinctions is outlined in Table E5.7 in Appendix E.

Further reductions in the number of potential sites at this stage were not considered to be warranted by the site selection team, for the following reasons:

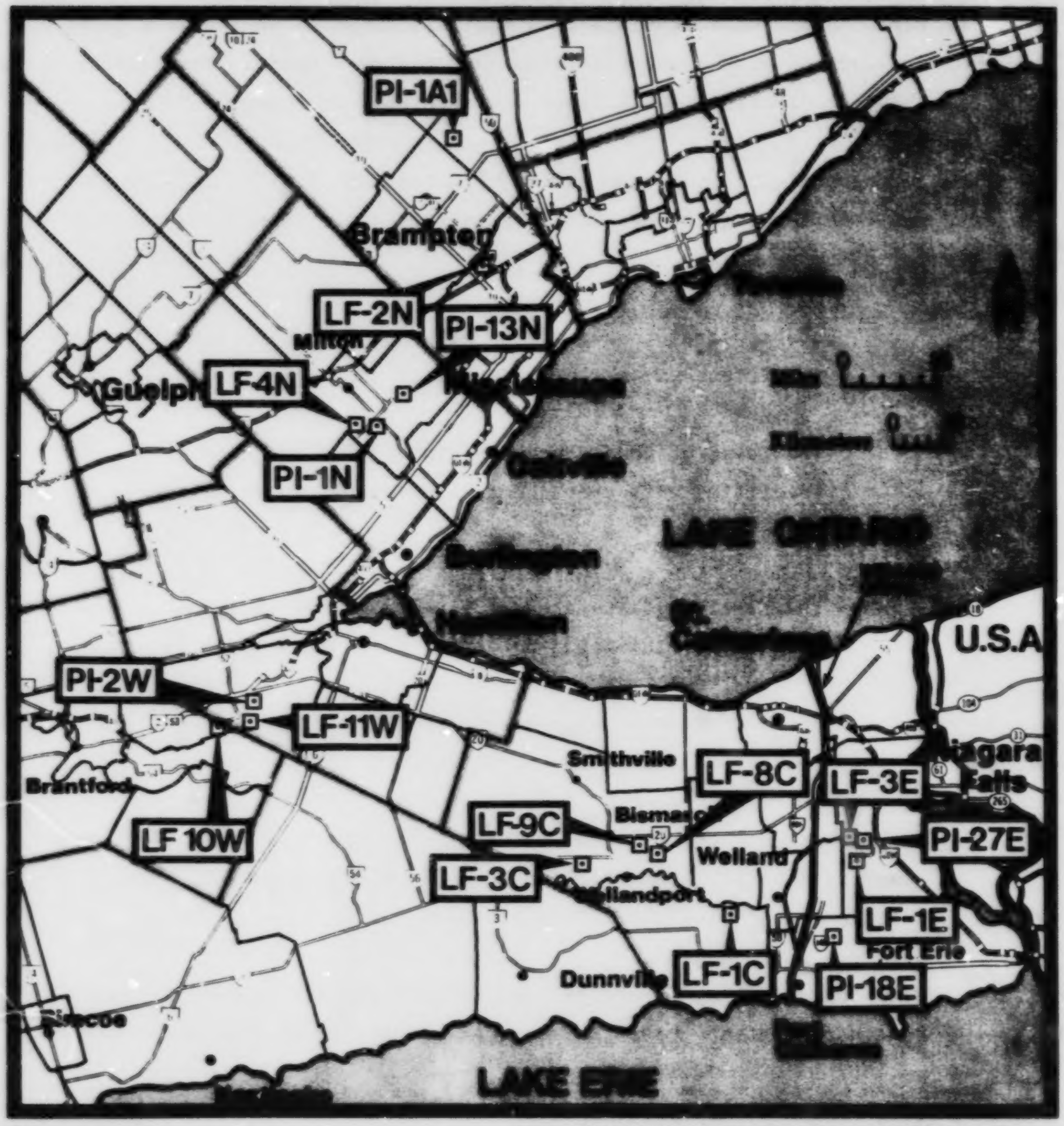
- the constraints associated with the potential sites were not sufficient to warrant rejection;
- the level of confidence associated with the constraints identified with the potential sites was insufficient to warrant rejection;
- the remaining site areas offered a number of advantages with respect to minimizing potential risks and impacts;
- the remaining site areas offered a diversity of choice with respect to siting opportunities and major tradeoffs.

The reasons why the sixteen potential sites were retained for further consideration are summarized in Table E5.8 in Appendix E. Their locations are illustrated in Figure 9.1.

From the diversity of choice perspective, the site selection team concluded that the potential site areas offered the following:

- industrially designated or proposed industrially designated sites - LF-2N, LF-1C, PI-27E, PI-1A1, PI-2W, PI-18E;
- urban shadow sites - LF-1E (partly), LF-3E, PI-1N;
- publicly owned sites - PI-13N (most of site), LF-1C, PI-2W;

Figure 9.1 Potential Sites **POTENTIAL SITE IDENTIFICATION**


PI-1A1
Brampton
LF-2N
PI-13N
Milton
Guelph
LF4N
Mississauga
Toronto
PI-1N
Oakville
LAKE ONTARIO
Burlington
Hamilton
St. Catharines
U.S.A
PI-2W
LF-11W
Smithville
LF-8C
LF-3E
Niagara Falls
Brantford
LF 10W
LF-9C
Bismarck
Welland
PI-27E
LF-3C
Wellandport
LF-1E
Fort Erie
Dunnville
LF-1C
PI-18E
Simcoe
LAKE ERIE

Legend

▣ Potential Site

— Regional Municipal & County Boundaries

— Township, Town & City Boundaries

LF Landfill

PI Physical/Chemical Treatment Plant & Incineration

Source: Ontario Waste Management Corporation. March, 1984.
Note: Symbols indicate location only, and not size or shape of sites.

Site Name	Landfill	Physical/ Chemical	Incinerator	
LF-2N	•	•		
LF-4N	•	•	•	Integrated
LF-10W	•	•	•	Integrated
LF-11W	•	•	•	Integrated
LF-1C	•			
LF-3C	•	•	•	Integrated
LF-8C	•	•	•	Integrated
LF-9C	•	•	•	Integrated
LF-1E	•	•	•	Integrated
LF-3E	•	•	•	Integrated
PI-1A1		•	•	
PI-1N		•	•	
PI-13N		•	•	
PI-2W		•	•	
PI-18E		•	•	
PI-27E		•	•	

- fully and partially integrated sites;

- sites with good regional transportation access - LF-2N, LF-4N, PI-1A1, PI-1N, PI-13N;

- sites relatively close to major highways - LF-2N, LF-4N, LF-10W, LF-11W, LF-1E, LF-3E, PI-1A1, PI-1N, PI-2W, PI-13N, PI-27E;

- sites with highly suitable hydrogeology - LF-3C, LF-8C, LF-9C, LF-1C;

- there also appeared to be a diversity of siting opportunities with respect to air quality/dispersion, land use, biological, social, agricultural and economic impacts and costs.

A description of each of the 152 site areas and their treatment during the identification of potential sites stage is provided in Appendix F.

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VOLUME 2

IDENTIFICATION OF POTENTIAL SITES

APPENDIX D

TABLE D-5.1

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
Site - "Pathways" into the Environment		
• To site facility components in hydrogeologic settings that will restrict naturally the movement of contaminants and protect groundwater resources and to utilize engineering measures where required to ensure maximum environmental safety	• exclusionary physical resource factors[1] (site area identification) • regional category and confining layer thickness • dominant material • geologic predictability • aquifer • surface drainage	• second level of protection concern • suitable for brief field checks • suitable for individual feature interpretation • suitable for mapping at 1:50,000 and 1:10,000 • major public concern • relates to risk • engineering measures not addressed - requires more detailed site-specific analysis • overview analysis
• To site facility components in hydrogeologic settings that will restrict naturally the movement of contaminants and protect human health, surface water resources and aquatic ecosystems	• exclusionary physical resource factors (site area identification) • regional category and confining layer thickness • dominant material • geologic predictability • surface drainage	• second level of protection concern suitable for brief field checks • suitable for individual feature interpretation • suitable for mapping at 1:50,000 and 1:10,000 • major public concern • relates to risk • aquatic ecosystems only addressed indirectly - requires more detailed site-specific analysis • overview analysis

[1] A listing of exclusionary factors employed in site area identification is provided in Table 3-4 in Volume I of this report.

TABLE D-5.1 (Cont'd)

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
° To site facility components in settings that minimize the hazards to the site as a result of such conditions as flooding, potential susceptibility to seismic disturbance and slope failures and to utilize engineering measures where required to ensure maximum environmental safety	° exclusionary physical resource factors (site area identification) ° surface drainage	° second level of protection concern ° suitable for air photo interpretation and brief field checks ° suitable for individual feature interpretations ° suitable for mapping at 1:50,000 and 1:10,000 ° major public concern ° relates to risk ° seismic disturbance - did not vary by site; slope failure and engineering measures not addressed; requires more detailed site-specific analysis ° overview analysis
° To site facility components in settings that facilitate environmental monitoring as well as the application of countermeasures including back-up emergency measures	° exclusionary factors physical resource (site area identification) ° regional category and confining layer thickness ° dominant material ° geologic predictability ° aquifer ° surface drainage	° second level of protection ° relates to risk ° suitable for mapping at 1:50,000 and with brief field checks ° major public concern ° countermeasures and back-up emergency facilities a detailed site-specific consideration
° To site facility components to minimize potential contamination of food chains in the environment	° exclusionary agricultural factors (site area identification) predominant soil capability class	° second level of protection concern ° relates to risk

TABLE D-5.1 (Cont'd)

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
Site - Human Exposure		
• To site facility components to minimize the number of people who might be exposed, as well as the duration of their exposure to contaminants in the event of a release	• exclusionary land use and social and economic factors (site area identification) • existing residential uses (site vicinity) • future residential uses (site vicinity) • other community and recreation features • proximity to nearest population concentrations	• second level of protection concern • relates to risk • suitable for brief field checks • suitable for individual feature interpretation • major public concern • duration of exposure not addressed; requires detailed analysis of risk
• To site facility components to minimize the potential for exposure of populations who are sensitive to exposure and/or are difficult to evacuate	• exclusionary social and economic factors (site area identification) • other community and recreation features • existing and future residential areas	• second level of protection concern • relates to risk • suitable for mapping at 1:50,000 and 1:10,000 • public concern • indirectly addressed as detailed population and facilities characteristics analysis not undertaken • suitable for individual feature interpretation
Transportation and Discharge: "Pathways" into the Environment		
• To select transportation routes and modes which minimize the likelihood of a release of contaminant during transit	• transportation cost • probability of transport accidents	• second level of protection concern • relates to risk • suitable for overview comparative analysis • major public concern

TABLE D-5.1 (Cont'd)

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
Physical and Biological		
• To avoid destruction and minimize disruption of significant natural ecosystems	• significant environmental units (SEUs) • non-SEU woodlots greater than 20 ha • aquatic habitat • wildlife habitat	• potential environmental impact • suitable for mapping at 1:50,000 and 1:10,000 • public concern • suitable for individual feature interpretation
• To avoid destruction and minimize disruption of significant vegetation or wildlife populations	• significant environmental units (SEUs) • non-SEU woodlots greater than 20 ha • aquatic habitat • wildlife habitat	• potential environmental impact • suitable for mapping at 1:50,000 and 1:10,000 • public concern • overview analysis • suitable for individual feature interpretation
• To avoid destruction and minimize disruption of rare or uncommon species of plant and animal life	• significant environmental units (SEUs)	• potential environmental impact • suitable for mapping at 1:50,000 and 1:10,000 • public concern • suitable for individual feature interpretation • only addressed to extent identified within SEUs
• To avoid destruction and minimize disruption to significant landforms and other physical features	• significant environmental units (SEUs) • dominant material	• potential environmental impact • suitable for mapping at 1:50,000 and 1:10,000 • public concern

TABLE D-5.1 (Cont'd)

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
		- suitable for individual feature interpretation - suitable for brief field checks
Agricultural Resources		
- To minimize the amount of land required to safely construct and operate the facility component(s)	- site size - site configuration	- minimizes potential for intrusion into exclusionary considerations
- To minimize displacement of prime agricultural soils	- exclusionary agricultural factors (site area identification) - urban shadow - predominant soil capability class - land use designations - publicly owned lands	- potential resource impacts - potentially related to risk - suitable for mapping at 1:50,000 and brief field checks - public concern
- To minimize displacement and disruption of existing farm enterprises	- exclusionary agricultural factors (site area identification) - urban shadow - farm building complexes	- potential resource impacts - suitable for mapping at 1:50,000 and 1:10,000 and brief field checks - public concern
- To minimize disruption to productive agricultural areas and to stable agricultural communities	- exclusionary agricultural factors (site area identification) - urban shadow - existing farm infrastructure	- potential resource impacts - suitable for some brief field checks - public concern - detailed social and community analysis not undertaken

TABLE D-5.1 (Cont'd)

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
- To minimize displacement of areas with a high potential for resource development	- exclusionary agricultural factors (site area identification) - urban shadow - predominant soil capability class	- potential resource impacts - suitable for mapping at 1:50,000 and brief field checks - potentially related to risk - public concern
Land Use and Land Ownership		
- To minimize conflict with existing, committed, proposed and planned land uses	- exclusionary land use factors - existing and future land use factors	- potential land use, social and economic impacts - relates to risk for some land use factors - suitable for mapping at 1:50,000 and agency checks - public and agency concern
- To maximize the potential for the establishment of the facility components in locations characterized by similar industrial uses	- existing industrial uses (site area) - existing industrial uses (site vicinity) - future industrial uses (site vicinity)	- potential for minimizing risk - potential adverse land use impacts - suitable for mapping at 1:50,000 and 1:10,000 - suitable for brief field checks - public concern
- To minimize the amount of private property required and the disruption to land ownership patterns	- publicly owned lands	- potential social, economic and land use impacts - public concern

TABLE D-5.1 (Cont'd)

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
		• implications for agricultural and community stability
• To minimize conflict with Federal, Provincial, Municipal and native communities, policies, programs and plans	• land use exclusionary factors (site area identification) • future land uses (site vicinity) • provincial planning designations (site area) • other community and recreation features (site area identification) • exclusionary agricultural factors (site area identification) • predominant soil capability class • significant environmental units (SEUs)	• potential environmental, social, economic and land use impacts • public and agency concerns • suitable for mapping at 1:50,000
Social		
• To minimize the displacement of people, particularly those groups and individuals vulnerable to change	• existing and future residential uses (site area) • community and recreation features (site area)	• second level of protection • relates to risk • potential social, economic and land use impacts

TABLE D-5.1 (Cont'd)

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
		• suitable for brief agency and field checks • major public concern
• To minimize losses or impacts on buildings and features of archaeological, historic, symbolic, cultural or social significance	• exclusionary social and economic factors (site area identification) • community and recreation features (site area)	• potential social impact • suitable for brief agency and field checks • public concerns • only addressed in terms of community features • consideration of buildings and features of archaeological and historical significance deferred until detailed site specific analysis • overview analysis
Economics		
• To minimize the displacement of business	• existing commercial uses (site area) • existing industrial uses (site area) • future commercial land uses (site area)	• potentially serious social, economic and land use impacts • suitable for brief field checks • public concern • overview analysis

TABLE D-5.1 (Cont'd)

Relationship of Objectives Used to Identify Potential Sites

Objectives	Related Factors	Reasons for Consideration/ Comments
Financial		
° To minimize site acquisition costs	° publicly owned lands ° transportation cost (receiver centroids)	° cost-related ° corporate concern ° only considered when no difference in risk or environmental impacts ° only considered indirectly; assumption that public lands less expensive
° To minimize transportation operations costs associated with hauling hazardous wastes to and among facility components		° cost-related ° relative suitability consideration ° also related to risk ° corporate concern ° primarily employed to reinforce factors and to maintain diversity of choice

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
Minimize Risk to Human Health							
Site "Pathways" into Environment							
• To site facility components in airsheds that have atmospheric dispersion characteristics which will protect air quality and aquatic and terrestrial ecosystems.	0					0	• considered in definition of candidate areas; further interpretation would require detailed site analysis and modelling; such analysis not considered warranted until short list of sites identified; possible to exclude site areas at this stage on the basis of more readily identifiable major constraints

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
• To site facility components to minimize hazards to the site from other uses which might contribute to the likelihood or severity of a release of contaminants.	0		0				• relative factor; acceptability would require detailed analysis and interviews; such analysis not considered warranted until short list of sites identified; possible to exclude site areas at this stage on the basis of more readily identifiable major constraints
• To locate liquid effluent discharge locations (if required) with dispersion characteristics that will protect human health, surface water resources and aquatic ecosystems.	0	0				0	• not enough to reject site areas

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
Minimize Risk to Human Health							
Site - Human Exposure							
• To site facility components to minimize the potential for the contamination of existing wells and other sources of water for human or animal consumption.	0	0	0				• indirectly considered by depth and consistency of silt-clay soils; would require detailed analysis of site and site vicinity; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints
Transportation and Discharge - Pathways into the Environment							
• To site facility components such that the physical settings along the access routes to the site(s) naturally restrict the movement of contaminants and protect human health, terrestrial and aquatic ecosystems.	0	0					• requires detailed access road analysis; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identi-

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
							fiable major constraints
Transportation and Discharge - Human Exposure							
° To site facility components to minimize the number of people who might be exposed and the duration of that exposure to contaminants along access routes to the site(s) in the event of a release.	0	0	0				° requires detailed access route analysis and interviews; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints
° To site facility components to minimize the potential for exposure of populations who are sensitive to exposure and/or are difficult to evacuate along access routes to the site(s).	0	0	0				° requires detailed access analysis and interviews; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
Minimize Environmental Impact							
Physical and Biological							
• To minimize physical impacts on surface water such as sedimentation and changes in base flow.	0	0			0		• requires detailed site analysis; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints; potentially mitigatible
• To minimize impacts on surface water quality from emissions.	0	0					• relative rather than absolute constraint; would require detailed site analysis and possibly modelling; such analysis not considered warranted as possible to exclude site areas at this

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
							stage on the basis of more readily identifiable major constraints
Resources • To minimize disruption of economically and/or recreationally important biological resources.	0	0	0	0			• requires detailed site analysis and discussion with owners and agencies; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints
• To minimize displacement of and disruption to heritage and archaeological resources.	0	0	0				• only an absolute constraint if major known resource on site

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
Social • To minimize conflict between the facility components, operations and the use and enjoyment of properties in the vicinity of the site(s) as a result of visual intrusion, noise, etc.	0	0		0			• requires detailed site analysis; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints; addressed indirectly - abutting uses
• To maximize compatibility between the facility components and character, image, traditions and lifestyle of the affected area.	0	0	0				• requires detailed community analysis and consultation; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
• To establish the facility components to the extent possible, in areas in which the local communities can adapt to the type of changes which might result from the project.	0		0	0			• requires detailed community analysis and consultation; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints
• To maximize community acceptance of the facility components.	0		0	0			• requires detailed community analysis and consultation; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints; may not vary by location

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
• To maximize compatibility with the visual character and appearance of the landscape in the vicinity of the facility components.	0	0		0			• requires detailed field investigations; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints; potentially mitigatible; addressed indirectly through overview of abutting uses
• To minimize conflict between the transportation of hazardous wastes to the facility components and the use and enjoyment of properties along access routes to the site(s).	0	0	0				• requires detailed access route analysis; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
• To minimize conflict between facility-related traffic and local traffic ensuring that access routes provide an acceptable level of service.	0	0	0				• requires detailed access route analysis; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints
Economic							
• To maximize local employment opportunities.	0				0		• potentially marginal variation among sites
• To minimize property value depreciation.	0	0	0	0			• requires detailed site specific analysis and consultation; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints; potentially mitigatible

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
• To minimize disruption to the operations of local businesses.	0	0	0	0			• requires detailed site specific investigations and business consultations; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints
• To maximize compatibility with the local and regional economic character of the affected area.	0		0	0			• requires detailed economic evaluation and community consultations; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
• To minimize adverse effects upon the provision and use of public and private community services and facilities.	0	0	0	0			• requires detailed community consultation; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints; potentially mitigatible
• To minimize the burden of municipal services and finance.	0	0	0	0			• requires detailed community consultation; such analysis not considered warranted as possible to exclude site areas at this stage on the basis of more readily identifiable major constraints; potentially mitigatible

TABLE D-5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
To Minimise Financial Costs to OWMC							
• To minimize approval costs.	0				0		• difficult to predict; may not vary substantially among locations
• To minimize on-site development costs.	0	0		0			• requires detailed site specific analysis; such analysis not considered warranted as possible to exclude site areas at this stage as the basis of more readily identifiable major constraints
• To minimize off-site development costs.	0	0					• requires detailed site-specific analysis; such analysis not considered warranted as possible to exclude site areas at this

TABLE -5.2

Identification of Potential Sites

Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
							stage as the basis of more readily identifiable major constraints
• To minimize development and/or operations costs associated with the construction and operation of the facility components.	0	0					• requires detailed site specific analysis; analysis not considered warranted as possible to exclude site areas at this stage as the basis of more readily identifiable major constraints
• To minimize development and/or operations costs necessitated by site or area characteristics.	0	0					• requires detailed site specific analysis; such analysis not considered warranted as possible to exclude site areas at this stage as the basis of

TABLE D-5.2
Identification of Potential Sites
Objectives Not Considered At This Stage

OBJECTIVES NOT ADDRESSED IN SCREENING	Requires Detailed Comparative Evaluation	Requires Detailed Access Road/Site Analysis	Requires Detailed Community Business Interviews	Potentially Mitigatible	Potentially Minor Consideration	Previously Addressed	COMMENTS
							more readily identifiable major constraints
• To minimize on and off-site development and/or operations costs associated with effluent dispersion.	0	0					• requires detailed site-specific analysis; such analysis not considered warranted as possible to exclude site areas at this stage as the basis of more readily identifiable major constraints

TABLE D5.3

Role of Facilities Characteristics [1]

Assumptions in Identifying Potential Sites

Facilities Characteristics Assumptions	Role In Identifying Potential Sites
• Waste distribution	• used in transportation ratings during relative suitability screen
• Waste quantities data and technical buffer requirements	• used in application of site size and configuration factors during all potential site identification screens
• Industrial nature of the facility components	• led to the establishment of a 400 m study area around the site area. The study area was employed to identify major potentially conflicting uses in the immediate vicinity of the site areas during the suitability, compatibility and systems screens • led to consideration of the degree of compatibility between the facility components and agriculture, natural environmental features, community and recreation features and various land uses, utilities and transportation facilities • led to the siting process being structured to maximize the potential for retaining industrial or potential industrial locations
• Nature of special wastes and possibility of release	• related to the degree to which different physical environmental conditions, e.g. confining layer thickness would inhibit the migration of contaminants, and to human exposure in the event of a release

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[1] A more detailed summary of the Facilities Characteristics Assumptions used in Phase 3B is found in Table A.1.2 and A.1.3 in Volume 1 of this report. A detailed explanation of the technical terms for these assumptions is found in the M.M. Dillon report entitled: Site Selection Process. Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones (1984a) and in the OWMC report Facilities Development Phase - Phase 3 Report (1984a and b).

TABLE D5.3 (Cont'd)

Role of Facilities Characteristics

Assumptions in Identifying Potential Sites

Facility Characteristics	Role In Identifying Potential Sites
	• the possibility of a short or long term airborne release and the potential concern with the long term consequences of daily stack and fugitive emissions led to the consideration of proximity to nearest community and regional population densities
• Potential of displacement of uses and features within the site.	• led to the desire to minimize the displacement of uses and features within the site including natural environmental resources, agricultural capability and uses, existing, future and planned residential, commercial and industrial land uses and community and recreation features

TABLE D5.4

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
Progressive Refinement of the Search Process	0			0		• initial suitability screen undertaken at a scale of 1:50,000 and involved a site area by site area interpretation of potential suitability using factors which could not be employed at the site area identification stage because of the range of variability within factors
	0				0	• remaining screening steps undertaken at a scale of 1:10,000; analysis undertaken based on more detailed interpretations of reports, air photos, etc. as well as brief field investigations undertaken by the other site selection consultants
				0		• analysis limited to data which could be analyzed by more detailed interpretations of existing available data

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
	0				0	• analysis limited to data which could be readily confirmed by brief field checks
		0	0	0	0	• analysis limited to major constraints for which there were no significant offsetting benefits
Definition of the Environment	0			0	0	• factors encompass range of hydrogeologic, hydrologic natural environment, agricultural, land use and land ownership, social and economic, transportation and utility consideration factors;
		0		0	0	• received low ranking if positive factor in minimizing adverse environmental impacts, if minor constraint or if can be readily mitigated; factors received high ranking if major potential adverse environmental effect
			0	0	0	• emphasis on minimizing adverse environmental effects in factor application

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
Protection of Human Health and the Environment	0			0	0	• factors pertaining to ability of hydrogeologic environment to inhibit the movement of contaminants e.g. confining layer thickness, potential hazards to the site area e.g. floodplains, transportation risk and potential human exposure
		0		0	0	• factor received low ranking i.e. low constraint if minimizes risk and high ranking if greater likelihood of risk from a "pathway" or human "receptor" perspective
			0			• emphasis in factor application on risk minimization
The Involvement of those Affected	0			0	0	• general public concerns with groundwater contamination, surface water contamination, transportation risk, agriculture, land use compatibility sensitive natural features, were reflected in factors

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
		0	0	0	0	• public emphasis on human health and environmental considerations taking precedence over cost-related factors reflected in factor ranking and application
	0				0	• public concern with social and community impacts and community character and lifestyle addressed indirectly through land use, urban shadow and community and recreation feature factors; potential impacts resulting from traffic, noise and odours were indirectly addressed during potential site identification by land use and social factors. A thorough treatment of the concerns cited above would require detailed community discussions, site investigations and facility layout. These matters will be addressed in Phase 4A

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
		0	0	0	0	• in terms of Fall 1983 OWMC public workshops responses - in potential site identification treated SEUs and local community and recreational features where warranted as exclusionary; also considered potential agricultural and land use constraints in greater detail
		0	0	0	0	• despite division of opinion by workshop participants re incinerator siting, surface granular soils, drumlins (Niagara), moraines, floodplains and major stream courses continued to be treated as exclusionary as they did not offer a second level of environmental protection
		0	0	0	0	• despite contrary position from workshop participants non-SEU woodlots greater than 20 ha continued to be treated as non-exclusionary because insufficient data for decision-making

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
		0	0		0	• many of agricultural factors which workshop participants felt should be treated as exclusionary continued to be treated as non-exclusionary. Field investigations were, however, undertaken for a large proportion of the site areas and major potential conflicts with agricultural uses were identified
	0	0	0	0	0	• OWMC January 1984 workshop responses contributed to: the addition of the transportation risk factor; the further consideration of the differences in the suitability of agricultural lands in stable rural as against urban shadow locations; the importance attached to the role of hydrogeologic and hydrologic environment in providing a second level of environmental protection; the treatment of all local natural features (with the exception of SEUs) in order to maximize

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
						the potential for preserving agricultural land; the need to retain sites which favoured both sides of the tradeoff between transportation haulage distance and depth of consistent silt-clay soil; the need to consider both rural and urban fringe sites; the desirability of industrial locations; the importance attached to ensuring an adequate separation distance between sensitive uses and the facility components; the need to consider air quality and air dispersion concerns and the importance of undertaking detailed investigations of social and community character concerns
Efficiency and Effectiveness of the Process	0			0	0	° efficiency and effectiveness reflected in decision to limit the initial screening analysis to factors which would be mapped at a scale of 1:50,000 using data derived from air

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
						photo interpretation, agency contacts, and reviews of secondary source materials
	0				0	• efficiency and effectiveness reflected in decision to limit the suitability, compatibility and systems screens to factors which could be mapped at a scale of 1:10,000 using data derived from air photo interpretation, agency contacts, reviews of secondary source materials and brief field investigations
	0	0	0		0	• led to the restriction of the use of comparative analysis to major, directly observable considerations which would result in substantial differences in relative suitability among site areas
A Second Level of Protection of the Environment	0	0	0	0	0	• hydrogeologic and surface water factors address the issue of the potential for natural containment

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
	0	0	0		0	° principle of transportation risk considered in the selection and use of the transportation risk factor ° principle in terms of air dispersion and air quality addressed in the maintenance of choice analysis
Likelihood of Suitability		0	0			° factors received high ranking i.e. high constraint if strong likelihood that affected area would not be suitable and could only be confirmed with very detailed investigations e.g. drilling
		0	0			° factors received low ranking i.e. low constraint if potentially unsuitable but suitability or lack of suitability can be readily confirmed
Maintenance of Choice		0	0		0	° where tradeoff and some doubt regarding which factors should take precedence, sufficient

TABLE D5.4 (Cont'd)

Role of Site Selection Principles in Identifying Potential Sites

PRINCIPLES	FACTOR ROLE			SCREENING STEP		ROLE IN IDENTIFICATION OF POTENTIAL SITES
	Factor Identification	Factor Ranking	Factor Application	Initial Suitability Screen	Suitability, Compatibility and Systems Screen	
						examples of each side of tradeoff retained
			0		0	• effort made to retain a diversity of siting choices for those factors which were not directly addressed in site screening

TABLE D-5.5

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
A. SITE SIZE AND SHAPE	
Site Size and Configuration	
Potential site areas which were determined to be too small or which had a configuration which was not suitable for the establishment of a facility component were rejected. The minimum site areas required were: - landfill 110 ha (272 acres) - integrated 112 ha (277 acres) - phys/chem & incinerator 80 ha (198 acres) Notes: [1] The minimum site sizes employed were approximately 25% less than was expected to be required. In this way, sites which were borderline with respect to site size or configuration would not be prematurely rejected. [2] Before a site was rejected on the basis of site size and/or configuration consideration was given to extending the boundaries of the site in different directions even if this meant a minor intrusion into a constrained area. Whenever there was any doubt regarding site size and configuration the site area was retained for further consideration.	Some site areas are simply too small or irregular in configuration to permit the establishment of a facility component. The extension of the site areas border(s) to create an adequate site size would result in an unacceptable conflict with one or more "exclusionary" factors.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
B. PHYSICAL RESOURCES	
Exclusionary Factors (Site Area Identification)	
Natural Containment Potential - Regional Category - (confining layer thickness) Regional category refers to a delineation of areas which share common geologic and hydrogeologic characteristics. Categories 1, 2 and 3 and 4 were employed in a hydrogeologic mapping of the Golden Horseshoe in Phase 3a. Categories 1 and 2 are further subdivided into 1a, 1b, 1c and 2a and 2b based on depth of materials.	Generally Category 1 is composed of silt-clay soils with lateral and vertical textural uniformity which range from 10 metres to over 30 metres in depth. This hydrogeologic setting should provide natural containment. Category 2 is generally comprised of at least 10 m of silt-clay soils which may be locally intermixed with sand. This hydrogeologic setting may provide only local natural containment. Categories 3 and 4 are generally comprised of a variety of geologic materials of variable thickness.
Natural Containment Potential - Texture of Geologic Material The hydrogeologic interpretation is based on the recognition that mappable geologic features are typically associated with assemblages of soil materials that have specific physical properties. These properties influence contaminant movement in the subsurface and are therefore indicative of the natural containment provided by the geologic materials underlying a particular site.	Geologic materials that will retard contaminant migration are preferable for waste management facilities.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
Natural Containment Potential - Geologic Predictability In areas where the stratigraphy is variable and complex, groundwater and contaminant movement patterns can be expected to be intricate and complicated. Groundwater movement patterns are difficult to predict in such areas. Where the stratigraphy is dominated by uniformly textured soils which are continuous both laterally and vertically, groundwater and contaminant movement patterns are predictable.	In keeping with OWMC's policy not to rely completely on engineered systems to safeguard the environment, all facilities are to be located where the natural environment contains predictable, uniform, geologic materials that will retard contaminant migration. Those hydrogeologic settings that are dominated primarily by thick, uniform, fine-textured soil materials appear to provide the desired degree of natural containment. Contaminant behaviour in such settings is reasonably predictable and the setting provides substantial lead time for implementing remedial measures in the event of an accidental spill or engineering failure. Emphasis is placed on establishing the uniformity, thickness and texture of the dominant geologic units underlying the site areas.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites
Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
Surface Drainage All surface drainage considerations which may affect facility siting are represented by a general "site area drainage" factor. This factor encompasses all drainage features (i.e. minor stream courses and associated flood plains and small wetland areas) which are not readily identifiable at the 1:50,000 scale used during constraint mapping).	Location of facilities adjacent to or on stream courses and flood plains could result in inundation or damage by flooding of the facilities resulting in the rapid release of contaminants into surface water. Similarly, the alluvial soils of flood plains are commonly coarse textured and may provide a pathway for the rapid migration and dispersal of contaminants. Wetlands occur in depressional areas which may have high water table conditions and/or standing water much of the year. Organic soils are common to wetlands. These areas may require remedial drainage and/or excavation and filling to improve building foundation characteristics.
C. BIOLOGICAL	
Significant Environmental Units (SEUs) The term SEU was coined to refer collectively to a number of types of areas which have been found to contain special environmental attributes or which perform significant environmental functions.	SEUs have been identified in existing reports as those areas of environmental significance within certain study areas, e.g. a drainage basin or Regional Municipality. Recognition of the significance of SEUs assists in attaining site selection objectives to avoid destruction and minimize disruption of significant landforms, significant ecosystems, vegetation or wildlife population and rare or uncommon species.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
Non-SEU Woodlots Greater Than 20 ha in Size	
Wooded areas which are not SEUs but which are greater than 20 ha in area extent. Many of these woodlots have not been studied intensively thus, their attributes are not precisely known.	These woodlots may have value as a forestry or recreational resource or they may contain rare or uncommon species or provide wildlife habitat. This factor flags areas which may have potential for significance but may not have been studied during SEU inventories.
Aquatic Habitat	
Aquatic habitat on-site was characterized based primarily on type, extent and permanence. Characteristics such as size and plant cover in addition to topographic map analysis were used to estimate the permanence of the water bodies examined.	Preservation of aquatic habitat is important for fish and aquatic wildlife populations.
Terrestrial Wildlife Habitat	
A subjective evaluation of wildlife habitat conditions on each site area was determined from field observation and air photo interpretation. Generally the degree of aquatic and terrestrial habitat diversity and amount of wooded cover present, determine the significance of wildlife habitat on-site. For example, significance was assigned to sites having large woodland blocks, especially if aquatic habitat and other vegetation communities were present on the site. In contrast, sites with limited natural vegetation cover and aquatic habitat, consisting of	Preservation of terrestrial habitat is important for wildlife and plant populations.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites
Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
drainage ditches or manicured ponds would be expected to have little habitat value for wildlife.	
Other Vegetation This factor applies to patches of woody vegetation on-site which are less than 20 ha in size and have no SEU designation associated with them.	Other vegetation contributes to defining the extent of natural vegetation cover on sites. The extent and pattern of all vegetation types is an important consideration in assessing terrestrial wildlife habitat. This factor relates to the goal to minimize environmental impact. There is a need to be aware of these vegetation units since they may provide habitat for significant wildlife species and/or may contribute to important environmental functions.
D. AGRICULTURAL	
Exclusionary Factors (Site Area Identification)	
Urban Shadow Those locations in agricultural areas where the pressures of urban-related uses have altered the agricultural land base, infrastructure and/or community sufficiently to de-stabilize the agriculture sector and place its long-term future in doubt.	The impacts of an OWMC facility siting to the agricultural sector will be lower on lands undergoing urban-related change than on lands which have been relatively free of such de-stabilizing pressures as land speculation, rural non-farm residences and severances.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
Predominant Soil Capability Class	
The predominant Canada Land Inventory Soil Capability (C.L.I.) class for growth of common field crops.	The capability classes represent the relative potential of the soils to produce common field crops on a long-term long-term basis. Impacts of an OWMC facility siting on the agricultural resource base are potentially higher on lands of better soil capability.
Existing Farm Building Complexes	
Farm building complexes includes the main barn(s) and associated structures such as storage sheds and silos.	The nature and condition of the farm building complex is indicative of the degree of current use of and level of investment in the farm operation. The impacts of an OWMC facility siting on the long-term stability of agriculture will be greater in areas with a high infrastructure investment in actively used buildings than those areas with lower investment.
E. LAND USE, PLANNING AND LAND OWNERSHIP	
Exclusionary Factors (Site Area Identification)	
Existing Industrial Uses (Site Area)	
The number and type of industrial land uses on the site area based on field surveys and air photo interpretation.	Generally, the more industrial the character of the site, the less the likelihood of land use conflict and adverse social and economic impact. Much depends on the character of the industry.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
	If the industrial use is to be displaced by an OWMC facility, re-establishment of the uses will be an important consideration in minimizing impact on employment and the municipal tax base.
Future Industrial Uses (Site Area) Future industrial uses may include draft plans of subdivision, designation in Official Plans or Official Plan amendments or industrial zoning.	The OWMC facilities, except for the landfill, are essentially industrial in character and will have a substantial degree of compatibility with most future industrial uses.
Existing Residential Uses (Site Area) The residential land uses on the site area based on field surveys and air photo interpretation.	The number of residential units within site areas is a good indication of the degree of risk, economic and social impact which may result from the establishment of a facility component on the site.
Future Residential Uses (Site Area) Future residential uses may include plans for residential subdivision, draft plans of subdivision, designation in official plans or official plan amendments or residential zoning.	OWMC facilities, except for the landfill are industrial in nature and as such are characterized by noise and rail and truck traffic. Such facilities are generally not compatible with residential built-up areas.
Existing Commercial Uses (Site Area) The number and type of commercial land uses on the site area	Commercial activities represent a constraint to development,

TABLE D-5.3 (Cont'd)

Identification of Potential Sites
Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
based on field surveys and air photo interpretation.	depending on the size and type of the commercial use, and ease of relocation. Capital investment in commercial areas is generally intensive. Minimizing impact on employment and the municipal tax base will be a consideration.
Future Commercial Uses (Site Area)	
Future commercial uses may include draft plans of subdivision, designation in official plans or official plan amendments or commercial zoning.	The potential closure of small businesses is a concern. The loss of capital investment in the area is a potential concern.
Provincial Planning Areas (Site Area)	
Lands designated within the Parkway Belt Planning Area and the Niagara Escarpment Planning Area.	The Parkway Belt Plan restricts uses to those "compatible" with the Parkway Belt, i.e., agricultural and recreational uses, transportation, utility and pipeline corridors. The Niagara Escarpment Plan controls are aimed at preserving the natural character of the Escarpment and its adjacent scenic areas and its provisions could permit OWMC type facilities.
Publicly Owned Lands (Site Area)	
Publicly owned lands include those lands owned by federal, provincial or municipal agencies.	Publicly owned lands are intended for uses which benefit the population at large. Use of these lands would minimize

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
	impacts upon private landowners. The location of an OWMC facility on publicly owned lands would involve less acquisition of lands in private ownership.
Rural/Agricultural Land Use Designation (Site Area) Official Plan designations for the site lands are an indication of the community's intentions in the short to medium term future for appropriate land uses.	Only lands which are designated rural or agricultural have any long-term opportunity to realize the potential of the land resource base for agriculture.
Existing Industrial Uses (Site Vicinity) The number and type of industrial land uses in the site vicinity based on field surveys and air photo interpretation.	Generally, the more industrial the character of the site vicinity, the less the likelihood of land use conflict and adverse social and economic impact. Much depends on the character of the industry.
Future Industrial Uses (Site Vicinity) Future industrial uses may include plans for industrial subdivision, draft plans of subdivision, designation in official plans or official plan amendments or industrial zoning.	The OWMC facilities, except for the landfill, are essentially industrial in character and will have a substantial degree of compatibility with most future industrial uses.
Existing Residential Uses (Site Vicinity) The residential uses in the site vicinity based on field surveys and air photo interpretation.	The number of residential units within the site vicinity is a good indication of the degree of risk, economic and social

TABLE D-5.5 (Cont'd)

Identification of Potential Sites
Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
	impact which may result from the establishment of a facility component on the adjacent site.
Future Residential Uses (Site Vicinity) Future residential uses may include plans for residential subdivision, draft plans of subdivision, designation in official plans or official plan amendments for residential zoning.	OWMC facilities, except for the landfill are industrial in nature and as such are characterized by noise and rail and truck traffic. Such facilities are generally not compatible with adjacent residential built-up areas.
Existing Commercial Uses (Site Vicinity) The number and type of commercial land uses in the site area based on field surveys and air photo interpretation.	Capital investment in commercial areas is generally intensive. Minimizing impact on employment and the municipal tax base will be a consideration. Generally existing commercial uses in the site vicinity would be incompatible with OWMC facilities.
Future Commercial Uses (Site Vicinity) Future commercial uses may include plans of subdivision, draft plans of subdivision, designations in official plans or official plan amendments or commercial zoning.	The potential closure of small businesses in the site vicinity is a concern. The loss of capital investment in the area is a potential concern. Generally, commercial uses in the site vicinity would be incompatible with OWMC facilities.
Rural Agricultural Land Use Designation (Site Vicinity) Rural and/or Agricultural designations in area municipality Official Plans	The majority of area municipality official plans utilize the terms "rural" and "agricultural" interchangeably

TABLE D-5.5 (Cont'd)

Identification of Potential Sites
Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
which refer to non-urban lands, whether currently in agricultural or other rural use.	to refer to all those lands not designated for urban uses. This indicator indentifies lands designated for the continuation of rural/agricultural uses, regardless of the significance of the lands from an agricultural perspective. It is noted, however, that the degree of constraint will vary depending on the permitted land uses within each designation. In some cases, the agricultural designation referes to prime agricultural lands (a high constraint) while rural refers to the balance of the lands (somewhat lesser contraint).
Proximity to Residential Communities	
Communities with predominantly residential uses were identified based upon field surveys and air photo interpretation. Such communities typically include community or commercial uses to serve the community, have a recognized name or are recognized by an appropriate designation in a municipal official plan.	Generally, the larger the community and the closer proximity to a potential site the greater the likelihood of land use conflict and adverse social and economic impact.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
F. SOCIAL AND ECONOMIC	
Non-Exclusionary Factors (Site Area Identification)	
Exclusionary Factors (Site Area Identification)	
Local Community and Recreation Features	
Community and recreation features are those providing leisure, cultural, educational, health, commercial, correctional and government services. Features under the jurisdiction of the government, private and commercial agencies were considered.	These features serve the local population and/or attract people and/or provide educational/health and safety, recreational and cultural, commercial or government services. Should any of these features be located on or in the vicinity of a site, the development of the site could potentially create social and economic impacts.
The following locally serving facilities were noted: ° health clinic ° local shopping centre ° public building (government offices, police departments, fire stations) ° library ° church ° cemetery ° park ° community centre ° cultural centre ° public sports facility (local) ° private sports facilitiy (local) ° historic site (designated) ° historic building (designated) Known planned and proposed features were also considered.	The potential impacts could occur through either displacement of a feature for site development, or normal operations or accidental emissions affecting nearby features.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites
Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
Population Density	
Population density is based on 1981 census data for enumeration areas on or adjacent to the site area.	The potential effect of the facility on population in the vicinity of the sites is a concern due to traffic, odour, noise and aesthetics. Such concerns will affect larger numbers of people in more densely populated areas, making mitigation measures more difficult to achieve.
Proximity to Population Concentrations	
Population concentrations are defined as built-up residential areas of more than 15 residences - 45-50 residents.	There is concern regarding the potential risk to health (i.e., from an accidental spill) and potential disruption to enjoyment and normal use of residential properties (i.e., due to potential noise and traffic disruption) that might be associated with facility development.
G. TRANSPORTATION	
Arterial Roads	
Arterial roads are intended to carry large volumes of all types of traffic moving at relatively high speeds. Freeways and expressways are arterial roadways but having full and partial access control, respectively. The Highway 400 series routes and the QEW are freeway facilities, whereas the balance of the provincial road series and the upper tier regional road systems are of the normal arterial type.	The arterial road system across the Province is viewed as the most logical system for the transport of special wastes from source to receiver sites. Maximum use of the freeway network is desirable due to the more favourable accident freeways. Proximity of an OWMC facility site to an arterial road is a desirable feature. Remoteness from an arterial route will increase site development costs due to the need to upgrade lower class roads or construct a new facility.

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
Utility Transmission Installations Includes the following facilities: Ontario Hydro transmission lines, oil and gas pipelines, trunk water and sanitary services, Bell Canada cables.	Siting of OWMC facilities should avoid conflict with existing utilities and services. No conflict will exist between these utilities and the proposed OWMC facilities provided an adequate spatial separation exists. The required spatial separation may vary for different types of utilities. Potential conflicts may be mitigated by transmission line relocation, in some cases.
Railway Lines Includes all active railway lines as well as abandoned lines.	The location of rail lines is relevant to property assembly and the possible use of rail lines as transportation corridors. Thus may be relevant to all facility types for either the conveyance of special waste or reagents required at the physical/chemical treatment site and solidification sites. Land assembly for facilities may be influenced by location of railway property. It is unlikely that OWMC facilities would straddle an existing rail line although it could be desirable to flank a rail line.
Airports Airports within the candidate areas could be affected by construction of OWMC facilities. The flight paths over the ground	This factor has a high importance in relation to Transport Canada airfields when considering integrated sites or

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
approach to these airfields could be in conflict with the height of physical structures required on an OWMC site(s), This in turn may affect the airport licence and/or operation.	physical/chemical incinerator sites. Height restrictions with a 4000 m radius or along the extension of a runway ensure that no obstructions interfere with the safe operation of airports. Considering the same facilities in relation to municipal airports (which do not have zoning protection) the factor is of moderate importance. In relationship to private airfields (which do not have zoning protection) the factor may be low to moderate depending upon the impact in relation to runway orientation where sites are located along the projected axis of a runway.
Transport Cost (Receiver Centroids) Assuming road transport of special wastes and process additives by trucks, the distance travelled and total annual loadings from source sites to alternative receiver sites provides an indicator of transportation system efficiency and transport costs. The measurement used is tonne-kilometres.	The lack of precise information on waste stream, containerization, transfer and consolidation stations, destinations for each waste stream by facility type and types of vehicles necessary to accommodate the shipments, prevents a detailed assessment of transport cost at this stage. To provide a relative index of transportation efficiency which is indicative of cost, the total annual tonne-kilometres of travel from each of the defined generator source areas to the alternative receiver cluster centroid was determined. This calculation assumed the transportation of 150,000 tonnes/annum of special

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
Utility Transmission Installations Includes the following facilities: Ontario Hydro transmission lines, oil and gas pipelines, trunk water and sanitary services, Bell Canada cables.	Siting of OWMC facilities should avoid conflict with existing utilities and services. No conflict will exist between these utilities and the proposed OWMC facilities provided an adequate spatial separation exists. The required spatial separation may vary for different types of utilities. Potential conflicts may be mitigated by transmission line relocation, in some cases.
Railway Lines Includes all active railway lines as well as abandoned lines.	The location of rail lines is relevant to property assembly and the possible use of rail lines as transportation corridors. Thus may be relevant to all facility types for either the conveyance of special waste or reagents required at the physical/chemical treatment site and solidification sites. Land assembly for facilities may be influenced by location of railway property. It is unlikely that OWMC facilities would straddle an existing rail line although it could be desirable to flank a rail line.
Airports Airports within the candidate areas could be affected by construction of OWMC facilities. The flight paths over the ground	This factor has a high importance in relation to Transport Canada airfields when considering integrated sites or

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
approach to these airfields could be in conflict with the height of physical structures required on an OWMC site(s), This in turn may affect the airport licence and/or operation.	physical/chemical incinerator sites. Height restrictions with a 4000 m radius or along the extension of a runway ensure that no obstructions interfere with the safe operation of airports. Considering the same facilities in relation to municipal airports (which do not have zoning protection) the factor is of moderate importance. In relationship to private airfields (which do not have zoning protection) the factor may be low to moderate depending upon the impact in relation to runway orientation where sites are located along the projected axis of a runway.
Transport Cost (Receiver Centroids) Assuming road transport of special wastes and process additives by trucks, the distance travelled and total annual loadings from source sites to alternative receiver sites provides an indicator of transportation system efficiency and transport costs. The measurement used is tonne-kilometres.	The lack of precise information on waste stream, containerization, transfer and consolidation stations, destinations for each waste stream by facility type and types of vehicles necessary to accommodate the shipments, prevents a detailed assessment of transport cost at this stage. To provide a relative index of transportation efficiency which is indicative of cost, the total annual tonne-kilometres of travel from each of the defined generator source areas to the alternative receiver cluster centroid was determined. This calculation assumed the transportation of 150,000 tonnes/annum of special

TABLE D-5.5 (Cont'd)

Identification of Potential Sites

Factor Definitions and Significance

FACTOR DEFINITION	SIGNIFICANCE
	wastes from the 43 municipal source sites to each receiver cluster centroid.
Probability of Transport Accidents The probability of transport accidents was calculated based on the routings between source sites and receiver centroids and the average annual accident rate by road classification, to produce a value which can be compared between site areas to produce an index of relative accident frequency.	The calculation of an accident frequency rate for each of the site areas requires a determination of the total number of vehicles using each link within the provincial road network. Since specific information on number of vehicles was not available, probability of transport accidents is a surrogate measure of accident frequency rate at this stage.

VOLUME 2

IDENTIFICATION OF POTENTIAL SITES

APPENDIX E

TABLE E-5.1

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
Level 1	**Natural Containment** (Gartner Lee Associates Ltd.) Categories 1A (LF) and 1A/1B (PI) • lacustrine silt-clay and Halton till • uniform geologic predictability	• provides second level of protection • public and workshop preference
Level 2	Categories 1B (LF) and IC (PI) • lacustrine silt-clay and Halton till • uniform geologic predictability	• provides second level of protection geologic predictability (from Level 1 category) but less depth
Level 3	Categories 2A (LF) and 2A/2B (PI) • moderate geologic variability and predictability • lacustrine silt-clay and Halton till	• potential constrained • potentially mitigatible • variability in suitability
Level 4	• spoil piles and moraines • areas of less than 20 m of silt-clay soil (LF) less than 10 m of silt-clay soil (PI)	• equivalent to site area identification exclusionary factors • fails to provide second level of protection • major constraint ranking - role dependent on portion of site area affected
Level 1	**Surface Drainage** • no stream courses • no flood plains • no wetlands	• no drainage constraint

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Level 2	• intermittent stream courses • intermittent wetland	• minor drainage constraint • mitigatible
Level 3	• perennial stream course • flood plain	• major drainage constraint • major constraint dependent on portion of site area affected
	Biological (Gartner Lee Associates Ltd.)	
No Constraint	• other vegetation • aquatic habitat • terrestrial wildlife habitat	• no SEUs • no non-SEU woodlots > 20 ha • no other vegetation, aquatic habitat and terrestrial wildlife habitat on or immediately adjacent to site • rated individually depending on feature characteristics, portion of site area affected and off-site habitat connections
Minor Constraint	• other vegetation • aquatic habitat • terrestrial wildlife habitat	• no SEUs • no non-SEU woodlots > 20 ha • possibly or very minor other vegetation, aquatic habitat and terrestrial wildlife habitat on or immediately adjacent to site • rated individually depending on feature characteristics, portion of site area affected and off-site habitat connections

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Moderate Constraint	• non-SEU woodlot >20 ha • other vegetation • aquatic habitat • terrestrial wildlife habitat	• no SEUs • non-SEU woodlots >20 ha • other vegetation, aquatic habitat and terrestrial wildlife habitat on or immediately adjacent to site • rated individually depending on feature characteristics, portion of site area affected and off-site habitat connections
Major Constraint	• SEUs • non-SEU woodlot >20 ha • other vegetation • aquatic habitat • terrestrial wildlife habitat	• SEU(s) on site • non-SEU woodlot >20 ha • other vegetation, aquatic habitat, terrestrial wildlife habitat • rated individually depending on feature characteristics, portions of site area affected and off-site habitat connection
	Agricultural Resources Ecologistics Ltd.	
Very Good	• designated industrial • urban residual • publicly owned	• highly suitable • applies to all soil capability classes
Good	• urban shadow • no farm buildings (predominant soil capability classes 3, 4, 5, 6 or 7)	• potentially suitable • urban shadow applies to all capability classes

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
	° all farm building complexes are in below average condition, hobby or horse farms (predominant soil capability classes 4, 5, 6 or 7) ° the minority of farm building complexes are in average or above average condition (predominant soil capability classes 5, 6 or 7) ° the majority of farm building complexes are in average or above average condition (predominant soil capability classes 5, 6, or 7)	
Fair	° no farm buildings (predominant soil capability class 2) ° all farm building complexes are in below average condition, hobby or horse farms (predominant soil capability classes 2 and 3) ° the minority of farm building complexes are in average or above average condition (predominant soil capability classes 3 and 4) ° the majority of farm building complexes are in average or above average condition (predominant soil capability class 4)	° relatively less suitable

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Poor	• no farm buildings (predominant soil capability class 1) • all farm building complexes are in below average condition, hobby or horse farms (predominant soil capability class 1) • the minority of farm building complexes are in average or above average condition (predominant soil capability classes 1 and 2) • the majority of farm building complexes are in average or above average condition (predominant soil capability classes 1, 2 and 3)	• least suitable - potentially exclusionary - requires feature by feature interpretation
	Social and Economic (Institute of Environmental Research Inc.)	
Low Constraints	• not more than one feature on site or within the 400 metre study area which can be relocated or is of limited significance and/or no population concentrations within 1 km of the site	• basically unconstrained • features and population concentrations require site area by site area and feature by feature interpretation
Moderate Constraints	• few features on site or within the 400 m study area and/or a • minor population concentration less than 1 km from the site area	• usually a relative suitability consideration • features, distances and population concentrations require a feature by feature and site area by site area interpretation

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
High Constraints	• many features on site or within 400 m study area and/or • a substantial population concentration less than 1 km from the site area and/or • cemeteries located on site, schools in study area	• least suitable • features, distances and population concentrations require feature by feature and site area by site area
	Land Use (Marshall Macklin Monaghan Ltd./ Leon Kentridge Associates Ltd.	
Low Constraint	• publicly owned land, site area • existing compatible industrial uses, site vicinity (medium to heavy industrial) • existing small industrial uses, site area (which might not be displaced • future and planned industrial uses (medium to heavy), site area (includes potential for industrial designation e.g. special study areas) • future and planned (medium to heavy) industrial uses, site vicinity • small number of residences and commercial uses on site and in vicinity of site area (approximate range 0-10) • well removed from major residential concentrations, i.e. approximately over 2 kilometres	• positive siting considerations • industrial designations a particular priority for physical/chemical treatment plant/incinerator site area • distances and number of residences in approximate range employed for comparative purposes • some site area by site area interpretations required

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Moderate Constraint	• moderately sized commercial and industrial uses, site area (high probability of displacement) • future commercial uses, site area • relatively close proximity to small residential and commercial clusters (within 1 kilometre) • some residences within site area and site vicinity (approximate range 10-25) • rural or agricultural designation • existing light and prestige industrial uses, site area and • site vicinity planned and proposed light and prestige industrial uses, site area and site vicinity • proximity to communities and major residential concentrations, 1 to 2 kilometres • provincial planning area, site vicinity (interpreted on a site area by site area basis)	• potentially suitable • distances and number of residences in approximate range employed for comparative purposes • some site area by site area interpretation required
High Constraint	• residential/ community designation on site or in site vicinity, substantial number of residences on site and	• least suitable • distance and number of residences in approximate range employed for comparative purposes

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
	in site vicinity (25+) ° major residential, commercial or industrial uses within site area (which could be displaced) ° close proximity to communities and major residential concentrations within 1 kilometre	° some site area by site area interpretation required
	Transportation (M.M. Dillon Ltd.)	
Low Site Area Constraints Transportation Accident Probability Index[1] - Best	° low site area constraints ° no smoke stack constraints (restriction imposed by airports) ° no regional road or highway or railway closures required ° no major or only local utility transmission lines crossing sites ° no or only local road closures required ° transportation accident probability index - 1.00-1.25	° positive siting considerations ° positive transportation accident probability index rating
Low Site Area Constraints - Transportation Accident Probability Index[1] - Good	° low site area constraints ° no stack constraints (restriction imposed by airports) ° no regional road or highway or railway, closures required	° positive siting considerations ° moderately less suitable transportation accident rating

[1] The transportation consultant rated site areas on the basis of relative regional transportation costs, transportation accident probability index, as well as combined relative regional transportation cost and accident probability index. Because ranking of the risk over cost goal and the approximate and incomplete nature other cost data the site selection team decided only to employ the transportation accident probability index at this stage.

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
	° no major utility transmission lines crossing sites ° transportation accident probability - 1.25 - 1.50	
Moderate Site Area Constraints - Transportation Accident Probability Index - Moderate	° moderate site area constraints - no smoke stack constraints (restriction imposed by airports) ° no regional road or highway closures required ° major utility transmission lines crossing sites ° no or only local road closures required ° transportation accident probability index - 1.50-1.75	° potentially suitable - site area constraint - potentially mitigatible ° transportation accident probability index - less suitable
Severe Site Area Constraint	° severe smoke stack constraint (restriction imposed by airport) ° regional road, highway, or railway closures required ° major roads, railways and utilities	° highly constrained potentially exclusionary - requires site area by site area interpretation ° major railways were interpreted as a possible opportunity as well as a constraint. However, there was insufficient information available to use it in rating or eliminating sites.
Transportation Accident Probability Index - Low	° transportation accident probability index 1.75 - 2.00	° least suitability - transportation accident probability index

TABLE E-5.1 (Cont'd)

Ranking of Factors - Identification of Potential Sites

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
	Site Size and Configuration (M.M. Dillon Ltd.)	
- Unconstrained	• larger than size requirements • adequate configuration	• suitable
Marginal	• approximately 75% or more of size requirement • marginal configuration	• potentially suitable
Inadequate	• less than 75% of size requirement • unsuitable configuration	• unsuitable

TABLE E-5.2

Overall Ranking of Factors - Identification of Potential Sites

Level 1

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
Level 1	Natural Containment (Gartner Lee Associates Ltd.) ° categories 1A (LF) and 1A/1B (PI) ° lacustrine silt-clay and Halton till ° uniform geologic predictability ° no drainage constraint	° provides second level of protection ° public and workshop preferences ° no stream courses, flood plains or wetlands
Level 1	Surface Drainage (Gartner Lee Associates Ltd.) ° no stream courses ° no flood plains ° no wetlands	° no drainage constraint
No Constraint	Biological (Gartner Lee Associates Ltd.) ° other vegetation ° aquatic habitat ° terrestrial wildlife habitat	° no SEUs ° no non-SEU woodlots > 20 ha ° no other vegetation, aquatic habitat and terrestrial wildlife habitat on or immediately adjacent to site
Very Good	Agriculture (Ecologistics Ltd.) ° designated industrial ° urban residual ° publicly owned	° highly suitable ° applies to all soil capability classes

TABLE E-5.2 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 1

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	Social and Economic (Institute of Environmental Research Inc.)	
Low	° not more than one feature on site or within the 400 metre study area which can be relocated or is of limited significance and/or no population concentrations within 1 kilometre of site	° basically unconstrained ° features and population concentrations require site-area-by-site-area and feature-by-feature interpretation
	Land Use (Marshall Macklin Monaghan Ltd. /Leon Kentridge Associates Ltd.)	
Low Constraint	° publicly owned land, site area ° existing compatible industrial uses, site vicinity (medium to heavy industrial) ° existing small industrial uses, site area (which might not be displaced) ° future and planned industrial uses (medium to heavy), site area (includes potential for industrial designation e.g. special study areas) ° future and planned (medium to heavy) industrial uses, site vicinity ° small number of residences and commercial uses on and in vicinity of site area (approximate range 0-10)	° positive siting considerations ° industrial designations a particular priority for physical chemical treatment plant/incinerator site area ° distances and number of residences, in approximate range employed for comparative purposes ° some site area by-site area interpretations required

TABLE E-5.2 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 1

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	° well-removed from major residential concentrations, i.e. approximately over 2 kilometres	
Low Site Area Constraints Transportation[1] Accident Probability Index - Best	**Transportation** (M.M. Dillon Ltd.) ° low site area constraints ° no smoke stack constraints (restriction imposed by airports) ° no regional road, highway or railway closures required ° no major or only local utility transmission lines crossing sites ° no or only local road closures required ° transportation accident probability index - 1.00-1.25	° positive siting consideration ° positive transportation accident probability index
Unconstrained	**Site Size and Configuration** (M.M. Dillon Ltd.) ° larger than size requirements ° adequate configuration	° suitable

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[1] The transportation consultant rated site areas on the basis of relative regional transportation costs, transportation accident probability index, as well as a combined relative regional transportation cost and accident probability index. Because of the ranking of the risk over cost goal and the approximate and incomplete nature of the other cost data the site selection team decided only to employ the transportation accident probability index at this stage.

TABLE E-5.3

Overall Ranking of Factors - Identification of Potential Sites

Level 2

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
Level 2	Natural Containment (Gartner Lee Associates Ltd.) Categories 1B (LF) and 1C (PI) ° lacustrine silt-clay and Halton till ° uniform geology predictability ° minor drainage constraint	° provides second level of protection ° no difference in geologic and predictability (from good category) but less depth ° intermittent stream courses and wetlands ° mitigatible effects
Level 2	Surface Drainage (Gartner Lee Associates Ltd.) ° intermittent stream courses ° intermittent wetlands	° minor drainage constraint ° mitigatible
Minor Constraint	Biological (Gartner Lee Associates Ltd.) ° other vegetation ° aquatic habitat ° terrestrial wildlife habitat	° no SEUs ° no non-SEU woodlots > 20 ha. ° possibly or very minor other vegetation, aquatic habitat and terrestrial wildlife habitat on or immediately adjacent to site

TABLE E-5.3 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 2

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
		° rated individually depending on feature characteristic, portion of site area affected and off-site habitat connection
Good	Agriculture (Ecologistics Ltd.) ° urban shadow ° no farm buildings (predominant soil capability classes 3, 4, 5, 6 or 7) ° all farm building complexes are in below average condition, hobby, or horse farms (predominant soil capability classes 4, 5, 6 or 7) ° the minority of farm building complexes are in average or above average condition (predominant soil capability classes 5, 6, or 7) ° the majority of farm building complexes are in average or above average condition (predominant soil capability classes 5, 6, or 7)	° potentially suitable ° urban shadow applies to all capability classes
Low Site Area Constraints Transportation Accident Probability Index - Good	Transportation (M.M. Dillon Ltd.) ° low site area constraint ° no stack constraints (restriction imposed by airports) ° no regional road, highway or railway closures required	° positive siting consideration ° moderately less suitable transportation accident probability index

TABLE E-5.3 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 2

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	° no major utility transmission lines crossing site ° transportation accident probability index 1.25 - 1.50	
Marginal	Site Size and Configuration ° approximately 75% or more of size requirement ° marginal configuration	° potentially suitable

TABLE E-5.4

Overall Ranking of Factors - Identification of Potential Sites

Level 3

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
Level 3	Physical Resources (Gartner Lee Associates Ltd.) Categories 2A (LF) and 2B (PI) ° moderate variability, geologic uniformity, lacustrine silt-clay and Halton till ° moderate variability, geologic predictability	° potentially constrained ° potentially mitigatible ° variability in suitability
Moderate Constraint	Biological Resources (Gartner Lee Associates Ltd.) ° non-SEU woodlot > 20 ha ° other vegetation ° aquatic habitat ° terrestrial wildlife habitat	° no SEUs ° non-SEU woodlot(s) > 20 ha. on site ° other vegetation, aquatic habitat or terrestrial wildlife habitat ° rated individually depending on feature characteristic, portions of site area affected and off-site habitat connections
Fair	Agriculture (Ecologistics Ltd.) ° no farm buildings (predominant soil capability class 2) ° all farm building complexes are in below average condition, hobby or horse	° relatively less suitable

TABLE E-5.4 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 3

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	farms (predominant soil capability classes 2 and 3) • the minority of farm building complexes are in average or above average condition (predominant soil capability classes 3 and 4) • the majority of farm building complexes are in average or above average condition (predominant soil capability class 4)	
Moderate Constraints	Social and Economic (Institute of Environmental Research Inc.) • few features on site or within the 400 metre study area and/or • a minor population concentration less than one kilometre from the site area	• usually a relative suitability consideration • features, distances and population concentrations require a feature by feature and site area by site area interpretation
Moderate Constraint	Land Use (Marshall Macklin Monaghan Ltd. /Leon Kentridge Associates Ltd.) • moderately sized commercial and industrial uses, site area (high probability of displacement)	• potentially suitable • distances and number of residences in approximate range

TABLE E-5.4 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 3

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	• future commercial uses, site area • relatively close proximity to small residential and commercial clusters (within one kilometre) • some residences within site area and site vicinity (approximate range (10-25) • rural or agricultural designation • existing light and prestige industrial uses, site area and site vicinity • planned and proposed light and prestige industrial uses, site area and site vicinity • proximity to communities and major residential concentrations, 1 to 2 kilometres • provincial planning area, site vicinity (interpreted on a site area by site area basis	employed for comparative purposes • some site area-by-site area interpretation required

TABLE E-5.4 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 3

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	Transportation (M.M. Dillon Ltd.)	
Moderate Site Area Constraints - Transportation Accident Probability Index - Moderate	° moderate site area constraints - no smoke stack constraints (restriction imposed by airports) ° no regional road or highway closures required ° major utility transmission lines crossing sites ° no or only local road closures required ° transportation accident probability index - 1.50-1.75	° potentially suitable - site area constraint - potential mitigatible ° transportation accident probability index - less suitable

TABLE E-5.5

Overall Ranking of Factors - Identification of Potential Sites

Level 4

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
Level 4	Natural Containment (Gartner Lee Associates Ltd.) (Areas of less than 20 m of silt-clay soil (LF), less than 10 m of silt-clay soil (PI) ° spoil piles and moraines	° equivalent to site area identification exclusionary factors ° fails to provide second level of protection ° major constraint ranking in role dependent on portion of site area affected
Level 3	Surface Drainage (Gartner Lee Associates Ltd.) ° stream courses ° flood plains ° wetlands	° major drainage constraint ° role dependent on portion of site area affected
Major Constraint	Biological Resources (Gartner Lee Associates Ltd.) ° SEUs ° non-SEU woodlot >20 ha ° other vegetation ° aquatic habitat ° terrestrial wildlife habitat	° major constraint ° SEU(s) on site ° non-SEU woodlots >20 ha ° other vegetation, aquatic habitat, terrestrial wildlife habitat ° rated individually depending on feature characteristics, portions of site area affected and off-site habitat connection

TABLE E-5.5 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 4

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	Agriculture (Ecologistics Ltd.)	
Poor	• no farm buildings (predominant soil capability class 1) • all farm building complexes are in below average conditions, hobby or horse farms (predominant soil capability class 1) • the minority of farm building complexes are in average or above average condition (predominant soil capability classes 1 and 2) • the majority of farm building complexes are in average or above average condition (predominant soil capability classes 1, 2 and 3)	• least suitable • requires feature by feature interpretation
	Social and Economic (Institute of Environmental Research Inc.)	
High Constraint	• many features on site or within 400 study area and/or • substantial population concentration less than one kilometre from the site area and/or • cemeteries on site, schools in study area	• least suitable • features, distances and population concentrations require feature by feature and site area by site area interpretation

TABLE E-5.5 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 4

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	Land Use (Marshall Macklin Monaghan Ltd. /Leon Kentridge Associates Ltd.)	
High Constraint	• residential/community designation on site or in site vicinity • substantial number of residences on site and in site vicinity (25+) • major residential, commercial or industrial uses within site area (which could be displaced) • close proximity to communities and major residential concentrations (within 1 kilometre)	• least suitable • distances and number of residences in approximate range employed for comparative purposes • site area by site area interpretation required
Severe Site Area Constraint Transportation Accident Probability Index - Low	Transportation (M.M. Dillon Ltd.) • severe smoke stack constraints (restriction imposed by airport) • regional road, highway or railway closures required • major roads, railways and utilities • transportation accident probability index 1.75-2.00	• highly constrained - potentially exclusionary - requires site area by site area interpretation • major railways were interpreted as a possible opportunity as well as a constraint. However, there was insufficient information available to use it in rating or eliminating sites • least suitable transportation accident probability rating

TABLE E-5.5 (Cont'd)

Overall Ranking of Factors - Identification of Potential Sites

Level 4

CONSULTANTS' RANKINGS	FACTORS	MAJOR REASONS FOR RANKINGS/COMMENTS
	Site Size and Configuration (M.M. Dillon Ltd.)	
Inadequate	• less than 75% of size requirement • suitable configuration	• unsuitable
All Consultants	• confirmation of site area exclusionary factors (land use, physical resources, agriculture, social and economic, transportation)	• unsuitable

TABLE E-5.6

Treatment of Site Areas - Relative Suitability

Site Areas Remaining	Treatment	Major Reasons
LF-2N	retain for further consideration	- minimizes land use, agricultural and biological impacts - natural containment constraint based on regional data - minimizes transportation risk
LF-4N	retain for further consideration	- only landfill which has favourable natural containment rating and transportation ratings - potentially moderate biological, land use - biology constraint minor
LF-10W	retain for further consideration	- relatively low transportation risk - proximity to Hwy. 403 - large site area; potential for minimizing land use and biological impacts
LF-11W	retain for further consideration	- no major constraints identified - surface drainage constraint avoidable - relatively low transportation risk; proximity to Hwy. 403
LF-1C	retain for further consideration	- major natural containment, land use, social and agricultural advantages - large site area - potential biological constraints require further investigations
LF-2C	drop from further consideration	- moderate social and major land use disadvantages; village residential adjacent to buffer; close proximity to Wainfleet - very indirect access - adequate range of sites remaining within top level natural containment renking without comparable disadvantages
LF-3C	retain for further consideration	- less severe land use impacts than LF-2C and less severe social and land use impacts than LF-15C - lower accident rate than LF-2C and LF-15C - necessary to retain diversity of siting choices - top level-natural containment

TABLE E-5.6 (Cont'd)

Treatment of Site Areas - Relative Suitability

Site Areas Remaining	Treatment	Major Reasons
LF-8C	retain for further consideration	- more direct access than LF-2C, LF-3C or LF-15C - large site area - may be possible to minimize land use and social impacts - necessary to retain diversity of siting choices - top level-natural containment
LF-9C	retain for further consideration	- less severe land use, social impacts than LF-8C or LF-15C - more direct access than LF-2C or LF-3C or LF-15C but less direct access than LF-8C - surface drainage constraint appears avoidable - necessary to retain diversity of siting choices - top level natural containment
LF-15C	drop from further consideration	- major biological limitations - large number of residences on site (3 groups of 15 or more within 1.2 km) - very indirect access - adequate range of sites remaining within top level natural containment ranking without comparable disadvantages
LF-1E	retain for further consideration	- highly rated for all factors but biology - large site area, need to consider further severity and potential for mitigation of biological impacts - proximity to QEW and diversity of PI sites
LF-3E	retain for further consideration	- favourably rated for all factors but biology - large site area-need to consider further severity and potential for mitigation of biological impacts

TABLE E-5.6 (Cont'd)

Treatment of Site Areas - Relative Suitability

Site Areas Remaining	Treatment	Major Reasons
PI-1A1	retain for further consideration	- no major constraints identified - major social, transportation, agricultural and biological advantages
PI-2A1	retain for further consideration	- no major constraints identified - surface drainage constraint avoidable - major social, transportation agricultural and biological advantages
PI-3A1	drop from further consideration	- major social/land use disadvantages - Mayfield Secondary School and Mayfield Recreation Complex on northwest boundary of site area - not industrially designated - industrially designated PI sites closer to suitable landfill
PI-1N	retain for further consideration	- no major constraints identified - major natural containment, social, transportation and agricultural advantages
PI-2N	retain for further consideration	- no major constraints identified - major natural containment, social, transportation, agricultural and biological advantages
PI-10N	drop from further consideration	- crossed by three streams and a gas pipeline in the north portion - less desirable - agricultural impacts and surface drainage than PI-1N and PI-2N - privately owned - site area PI-13N and PI-14N partially publicly owned in same vicinity
PI-13N	retain for further consideration	- major transportation, social and agricultural advantages - biological constraint potentially avoidable with placement of operations area and by combining PI-13N and PI-14N - most of site publicly owned

TABLE E-5.6 (Cont'd)

Treatment of Site Areas - Relative Suitability

Site Areas Remaining	Treatment	Major Reasons
PI-14N	retain for further consideration	- no major constraints identified - surface drainage constraint avoidable - major transportation and agricultural advantages
PI-2W	retain for further consideration	- only PI remaining in western portion of Niagara Peninsula - surface drainage constraint avoidable - industrially designated - access to Hwy. 403
PI-15C	drop from further consideration	- very indirect transportation access - irregular site configuration - close proximity to Wainfleet - close proximity to sensitive crops - more suitable and more accessible industrially designated PIs in the same vicinity
PI-19C	retain for further consideration	- part of a cluster of PIs in eastern and central part of Niagara Peninsula; preferable to compare
PI-21C	retain for further consideration	- as above
PI-22C	retain for further consideration	- as above
PI-26C	retain for further consideration	- as above
PI-1E	retain for further consideration	- as above
PI-2E	retain for further consideration	- as above
PI-4E	retain for further consideration	- as above

TABLE E-5.6 (Cont'd)

Treatment of Site Areas - Relative Suitability

Site Areas Remaining	Treatment	Major Reasons
PI-5E	retain for further consideration	- as above
PI-6E	retain for further consideration	- as above
PI-9E	retain for further consideration	- as above
PI-10E	retain for further consideration	- as above
PI-11E	retain for further consideration	- as above
PI-12E	retain for further consideration	- as above
PI-13E	retain for further consideration	- as above
PI-14E	retain for further consideration	- as above
PI-16E	retain for further consideration	- as above
PI-17E	retain for further consideration	- as above
PI-18E	retain for further consideration	- as above
PI-20E	retain for further consideration	- as above
PI-21E	retain for further consideration	- as above
PI-26E	retain for further consideration	- as above
PI-27E	retain for further consideration	- as above
PI-31E	retain for further consideration	- as above

TABLE E-5.7

Facility Arrangements - Sites for Initial Comparative Evaluation

SITE	FACILITY ARRANGEMENTS	RATIONALE
Integrated/ Landfill Sites		
LF-2N	landfill or landfill and physical/chemical treatment plant	incinerator not possible because of proximity to Pearson International Airport; stack would interfere with airport operations
LF-4N	fully integrated or landfill only	fully integrated may not be possible because of air dispersion constraint posed by Niagara Escarpment
LF-10W	fully integrated or landfill only	landfill only may be preferred because of agricultural character of area and proximity of industrial PI site (PI-2W)
LF-11W	fully integrated or landfill only	landfill only may be preferred because of agricultural character of area and proximity of industrial PI site (PI-2W)
LF-3C	fully integrated	no industrially designated site within reasonable proximity
LF-8C	fully integrated	no industrially designated site within reasonable proximity
LF-9C	fully integrated	no industrially designated site within reasonable proximity
LF-1C	landfill or landfill and physical/chemical treatment only	incinerator not possible because incinerator stack would interfere with Welland - Port Colborne Airport operations

TABLE E-5.7 (Cont'd)

Facility Arrangements - Sites for Initial Comparative Evaluation

SITE	FACILITY ARRANGEMENTS	RATIONALE
LF-1E	fully integrated or landfill only	landfill only may be preferred because of agricultural character of area and proximity of industrial site (PI-27E)
LF-3E	fully integrated or landfill only	landfill only may be preferred because of agricultural character of area and proximity of industrial site (PI-27E)
Physical/ Chemical Treatment Plant-Incinerator **Sites**		
PI-1A1	incinerator or physical/ chemical treatment plant or both	in association with LF-2N
PI-1N	incinerator or physical/ chemical treatment plant or both	in association with LF-4N or LF-2N
PI-13N	incinerator or physical/ chemical treatment plant or both	in association with LF-2N or LF-4N
PI-2W	incinerator or physical/ chemical treatment plant or both	in association with LF-4N, LF-10W or LF-11W
PI-18E	incinerator or physical/ chemical treatment plant or both	in association with LF-1C
PI-27E	incinerator or physical/ chemical treatment plant or both	in association with LF-1E or LF-3E

TABLE E-5.8

Reasons for Site Retention

SITE	REASONS FOR RETENTION
Integrated/ Landfill Sites	
LF-2N	° industrially designated (proposed-currently Special Policy area) ° good regional transportation access ° agriculturally desirable ° constraints not sufficient to reject site based on analysis undertaken to this point
LF-4N	° good regional transportation access ° physical resources appear suitable ° constraints not sufficient to reject site based on analysis undertaken to this point
LF-10W	° good regional transportation access ° constraints not sufficient to reject site based on analysis undertaken to this point
LF-11W	° good regional transportation access ° constraints not sufficient to reject site based on analysis undertaken to this point
LF-3C	° highly suitable natural containment ° constraints not sufficient to reject site based on analysis undertaken to this point
LF-8C	° highly suitable natural containment ° constraints not sufficient to reject site based on analysis undertaken to this point
LF-9C	° highly suitable natural containment ° constraints not sufficient to reject site based on analysis undertaken to this point
LF-1C	° proposed industrial designation ° highly suitable natural containment ° constraints not sufficient to reject site based on analysis undertaken to this point ° publicly owned
LF-1E	° close proximity to QEW ° urban shadow (partly) ° close proximity to industrial areas ° constraints not sufficient to reject site based on analysis undertaken to this point

TABLE E-5.8 (Cont'd)

Reasons for Site Retention

SITE	REASONS FOR RETENTION
LF-3E	° close proximity to QEW ° close proximity to industrial areas ° urban shadow ° constraints not sufficient to reject site based on analysis undertaken to this point
Physical/ Chemical Treatment Plant-Incinerator	
PI-1A1	° industrially designated ° good regional transportation access ° proximity to LF-2N ° constraints not sufficient to reject site based on analysis undertaken to this point
PI-1N	° urban shadow ° good regional transportation access ° proximity to LF-4N and LF-2N ° constraints not sufficient to reject site based on analysis undertaken to this point
PI-13N	° largely publicly owned ° proximity to LF-4N and LF-2N ° further removed from the Niagara Escarpment than PI-1N ° constraints not sufficient to reject site based on analysis undertaken to this point
PI-2W	° industrially designated ° good regional transportation access ° proximity to LF-4N, LF-10W and LF-11W ° constraints not sufficient to reject site based on analysis undertaken to this point ° publicly owned
PI-18E	° industrially designated ° proximity to LF-1C ° constraints not sufficient to reject site based on analysis undertaken to this point
PI-27E	° proposed industrial designation ° proximity to LF-1E and LF-3E ° constraints not sufficient to reject site based on analysis undertaken to this point

SITE SELECTION PROCESS
PHASE 3B: SELECTION OF CANDIDATE SITES
SITE SELECTION
VOLUME 2 - Identification of Potential Sites

APPENDIX F

Summary Analysis of Site Areas

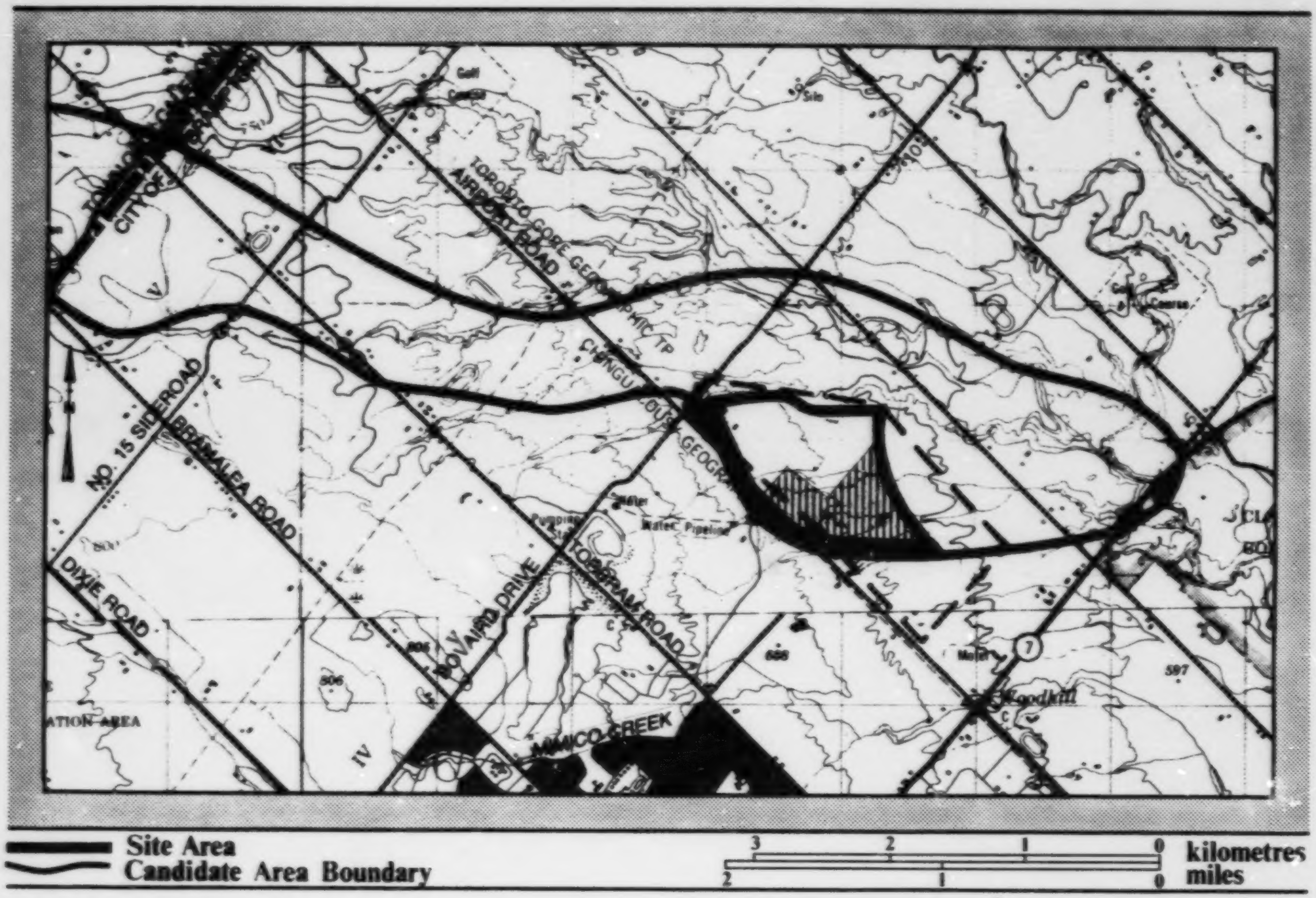
Appendix F Summary Analysis of Site Areas

POTENTIAL SITE IDENTIFICATION

Legend

▥	**Floodplain**
→	**Stream Course**
▩	**Significant Environmental Unit (SEU)**
2	**Community and/or Recreation Feature**
▒	**Conservation Area**
■	**Airport**
┈	**Hydro Line**
—	**Pipeline**
- - -	**Railway**
░	**Planned Road**
······	**Telephone Line**
▥	**Land Use Constraint**
▤	**Physical Resource Constraint**
■	**Agriculture Constraint**
▨	**Transportation Constraint**
▦	**Agriculture and Land Use Constraints**
▓	**Agriculture and Physical Resource Constraints**
▩	**Agriculture, Land Use and Physical Resource Constraints**
⁝	**Transportation and Land Use Constraints**
— — —	**Study Area Boundary**

Study area boundaries were provided to the consultants based on roads and other readily identifiable features. This facilitated field investigations and ensured major constraints in the immediate proximity of the site areas were identified. Study area boundaries were also provided which generally coincided with the site area boundaries which emerged following constraint mapping. These boundaries were used for supplementary investigations which were undertaken to resolve inconsistencies and to fill gaps. Only constraints which were identified within the site area boundaries are discussed and illustrated in the summary analysis of site areas in Appendix F of Volume 2.


TORONTO GORE GEOGRAPHIC TP
AIRPORT ROAD
CITY OF
NO. 15 SIDEROAD
BRAMALEA ROAD
DIXIE ROAD
BOVAIRD DRIVE
TORBRAM ROAD
MIMICO CREEK
Golf Course
Water
Pumping Station
Water Pipeline
7
Woodhill
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

A serviced industrial development is located in the southern portion of the site.

The remaining unconstrained area is not of sufficient size to accommodate a landfill or integrated facility.

Adjacent Constraints:

The expansion of the site area boundaries is restricted by a floodplain to the north; residential designated and vacant land to the east; Peel Regional Road 7 and the candidate area boundary to the west. In addition, there is a proposed future residential designation to the northwest.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☒
5. agriculture ☐
6. social ☐
7. transportation ☐

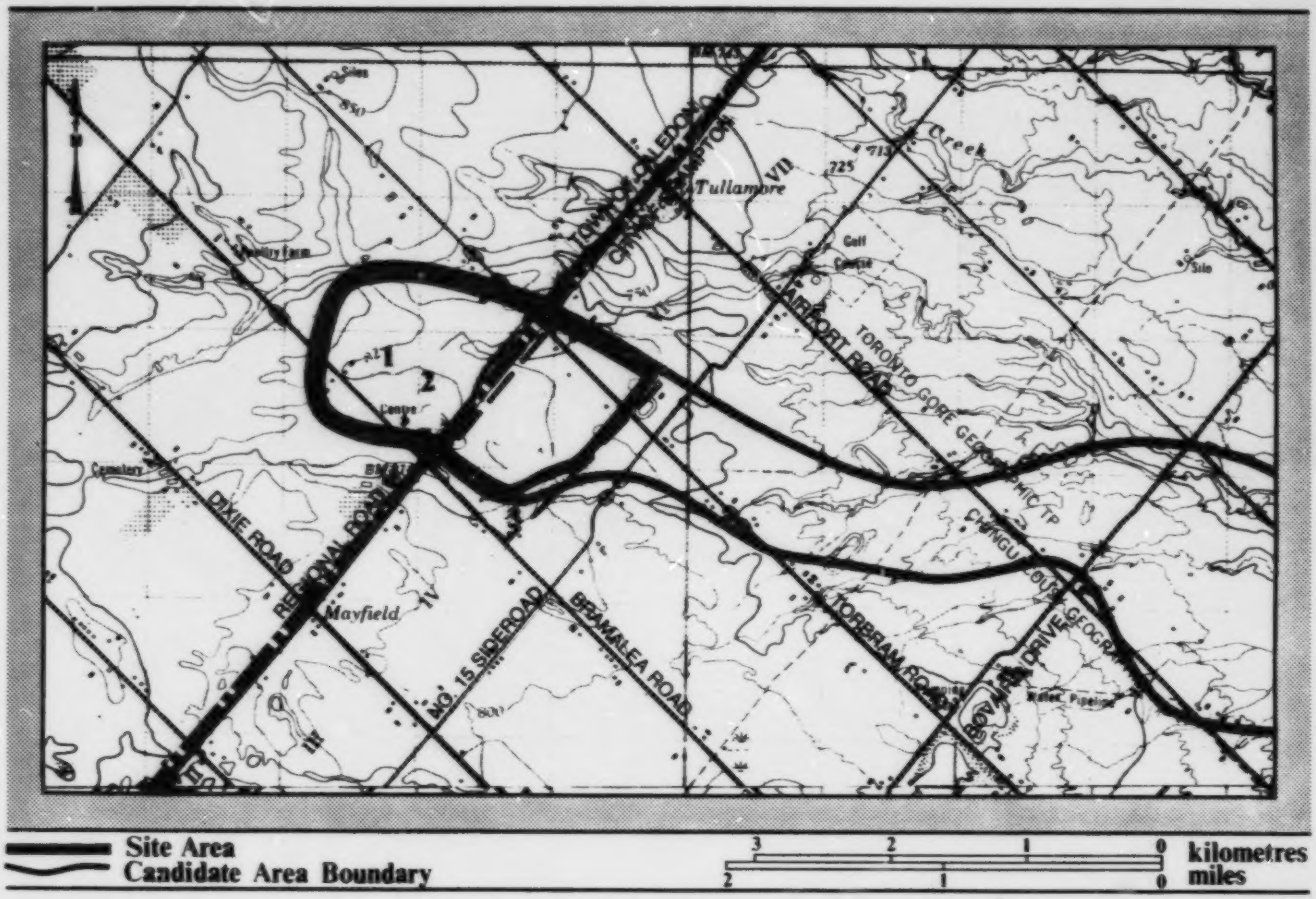
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-1A1


Siles
850
Country Farm
TOWN OF CALEDON
CITY OF BRAMPTON
VII
725
713
Creek
Tullamore
Golf Course
Silo
750
AIRPORT ROAD
TORONTO GORE GEOGRAPHIC TP
CHINGUACOUSY GEOGRAPHIC TP
1
2
3
Centre
Cemetery
DIXIE ROAD
REGIONAL ROAD
Mayfield
IV
NO. 15 SIDEROAD
BRAMALEA ROAD
TORBRAM ROAD
GOREWAY DRIVE
800
Pipeline
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is constrained by the Mayfield Secondary School (1) and the Mayfield Recreation Complex (2) which are located within the site area. The Bramalea Christian Fellowship Church (3) (currently under construction) is located on the west border of the site area. Peel Regional Road 14 crosses the centre of the site area and also presents a constraint to site development.

The size of the remaining unconstrained area is insufficient to accommodate a landfill or integrated facility.

Adjacent Constraints:

Site area expansion is restricted by a floodplain and the candidate area boundary to the west; the candidate area boundary to the north and east; and proposed residential designated and vacant land to the south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

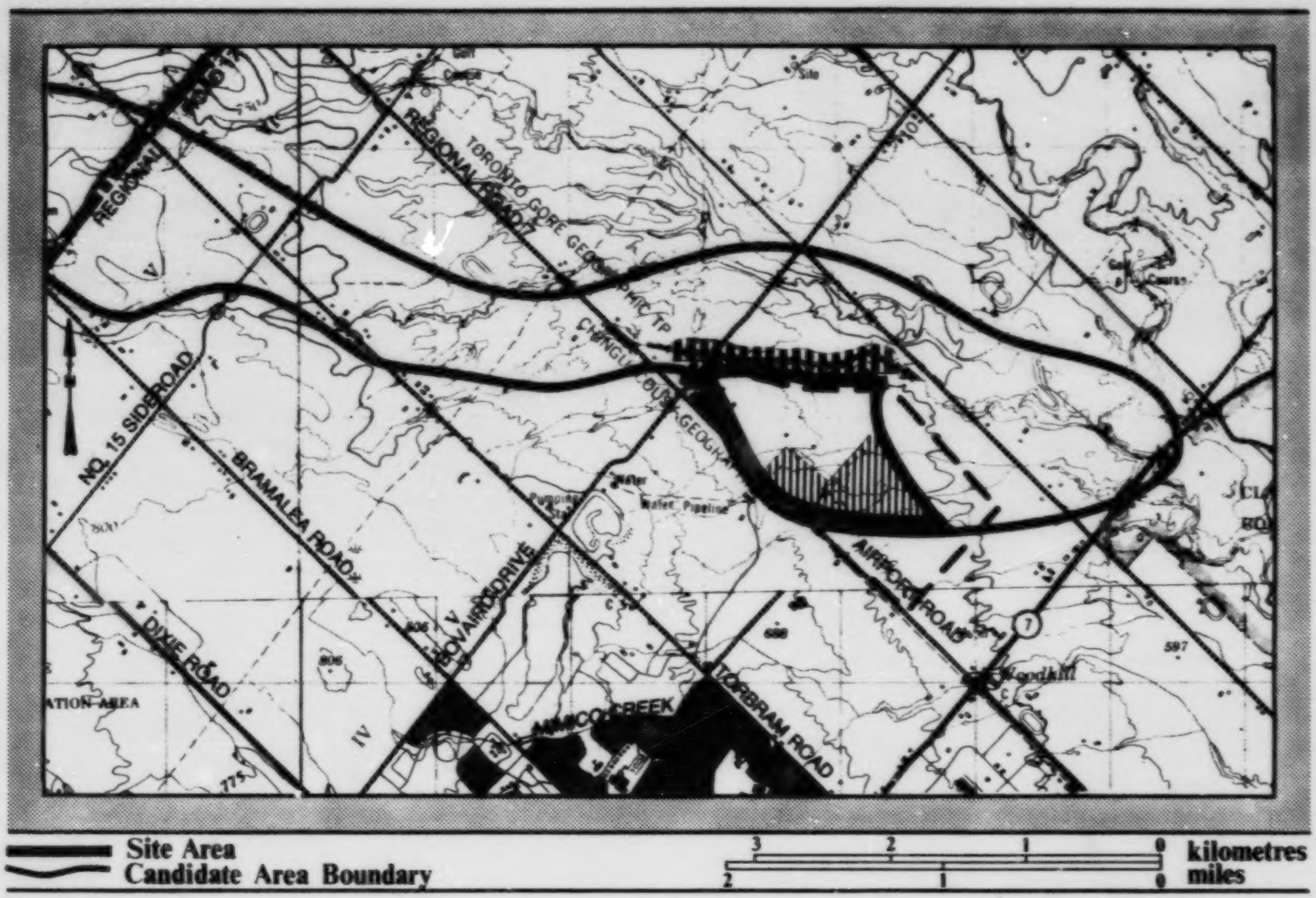
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-2A1


REGIONAL ROAD 17
REGIONAL ROAD 7
TORONTO GORE GEOGRAPHIC TP
CHINGUACOUSY GEOGRAPHIC TP
NO. 15 SIDEROAD
BRAMALEA ROAD
DIXIE ROAD
BOVAIRD DRIVE
AIRPORT ROAD
TORBRAM ROAD
MIMICO CREEK
Water Pipeline
Woodhill
7
800
775
597
IV
V
ATION AREA
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A serviced industrial development is located in the south portion of the site area.

The site area is designated industrial. It was combined with the south portion of P1-2A1 (also designated industrial). The combination of these two site areas provides sufficient size to accommodate a combined physical/chemical treatment plant and incinerator facility. A floodplain divides the two areas, but the operations area of the facility can be located within the constraint-free area.

Adjacent Constraints:

Expansion of the combined site area boundaries is restricted by residential designated and vacant land to the east; Peel Regional Road 7 and the candidate area boundary to the west; an estate residential area to the northwest and by a floodplain and proposed residential designated and vacant land to the north.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☒
5. agriculture ☐
6. social ☐
7. transportation ☐

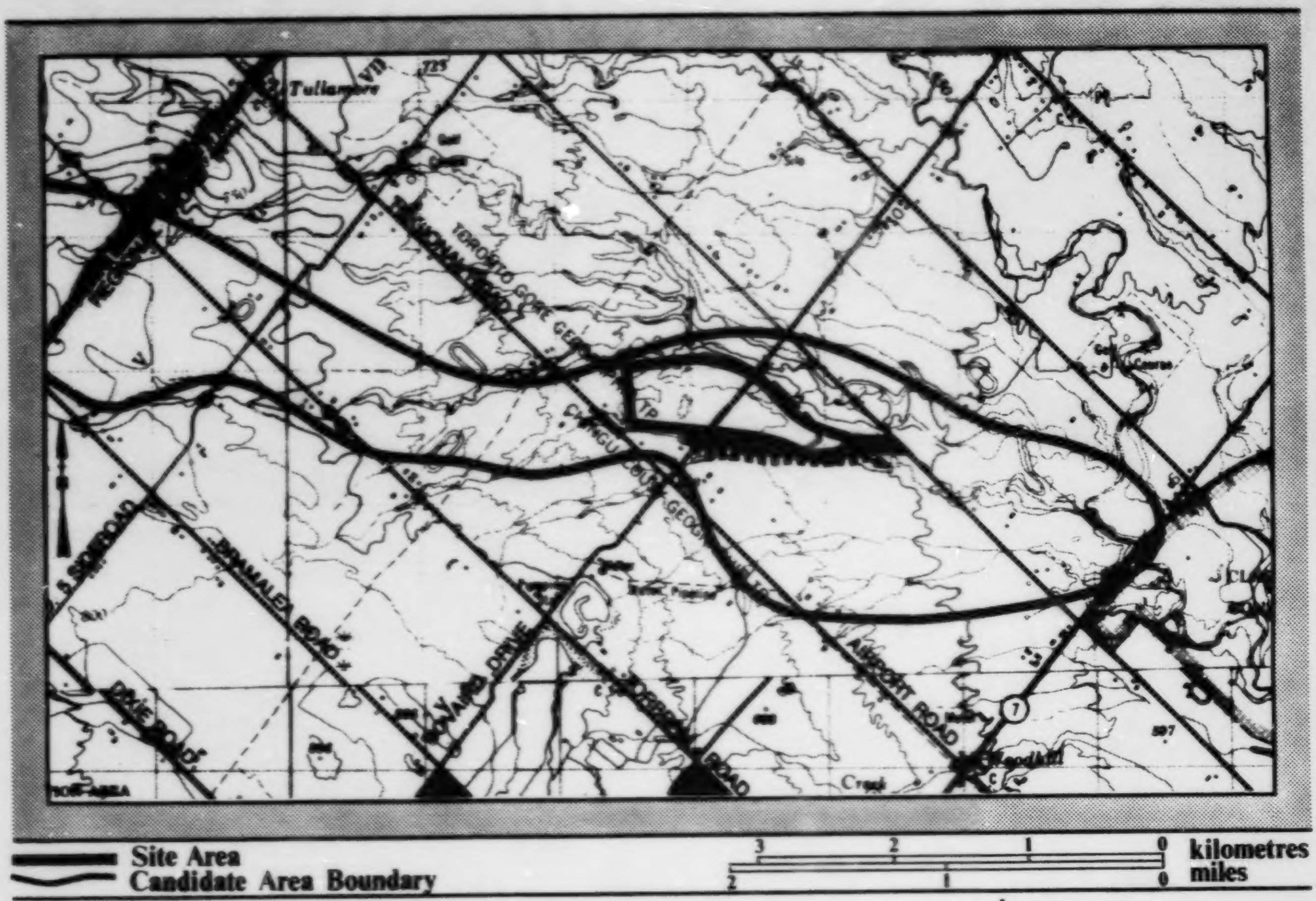
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-1A1


Tullamore
TORONTO GORE
5 SIDEROAD
BRAMALEA ROAD
DIXIE ROAD
TORBRAM ROAD
AIRPORT ROAD
7
Woodhill
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The south portion of the site area is designated industrial. It was combined with PI-1A1 (also designated industrial). The combination of these two site areas provides sufficient size to accommodate a combined physical/chemical treatment plant and incinerator facility. A floodplain divides the two areas, but, the operations area of the facility can be located within the constraint-free area.

Adjacent Constraints:

Expansion of the combined site area boundaries is restricted by floodplain to the east; Peel Regional Road 7 and the candidate area boundary to the west; a residential area to the northwest and by a floodplain and proposed residential designated and vacant land to the north.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

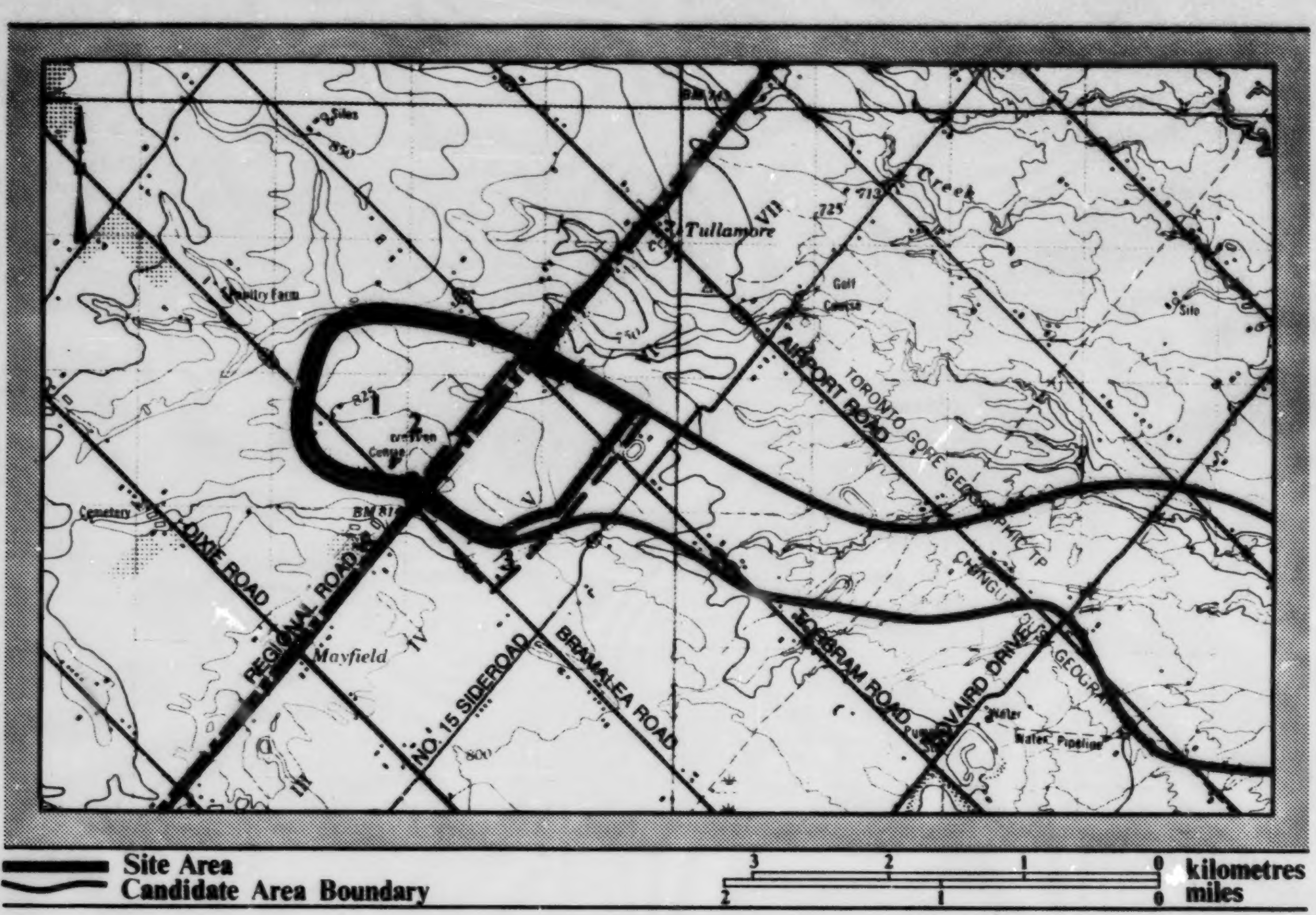
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-2A1


Tullamore
Creek
Golf Course
Site
Cemetery
Mayfield
DIXIE ROAD
REGIONAL ROAD 14
NO. 15 SIDEROAD
BRAMALEA ROAD
TORBRAM ROAD
AIRPORT ROAD
TORONTO GORE GEOGRAPHIC TP
CHINGU
GEOGR
GOREWAY DRIVE
Water Pipeline
BM 816
850
825
800
725
713
1
2
3
VII
IV
III
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

This site area is constrained by the Mayfield Secondary School (1) and the Mayfield Recreation Complex (2) located within the site area. The Bramalea Christian Fellowship Church (3) (currently under construction) is located on the western boundary of the site area. Peel Regional Road 14 crosses the centre portion of the site area and also presents a constraint to site development.

In addition, the site area is currently designated rural. The characteristics of PI-3A1 were compared with those possessed by other site areas in the same vicinity. It was concluded that there remained an adequate range of site areas with similar advantages to PI-3A1 but with less severe disadvantages.

Adjacent Constraints:

The site area expansion is restricted by a floodplain and the candidate area boundary to the west; the candidate area boundary to the north and east; and proposed residential designated and vacant land to the south.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

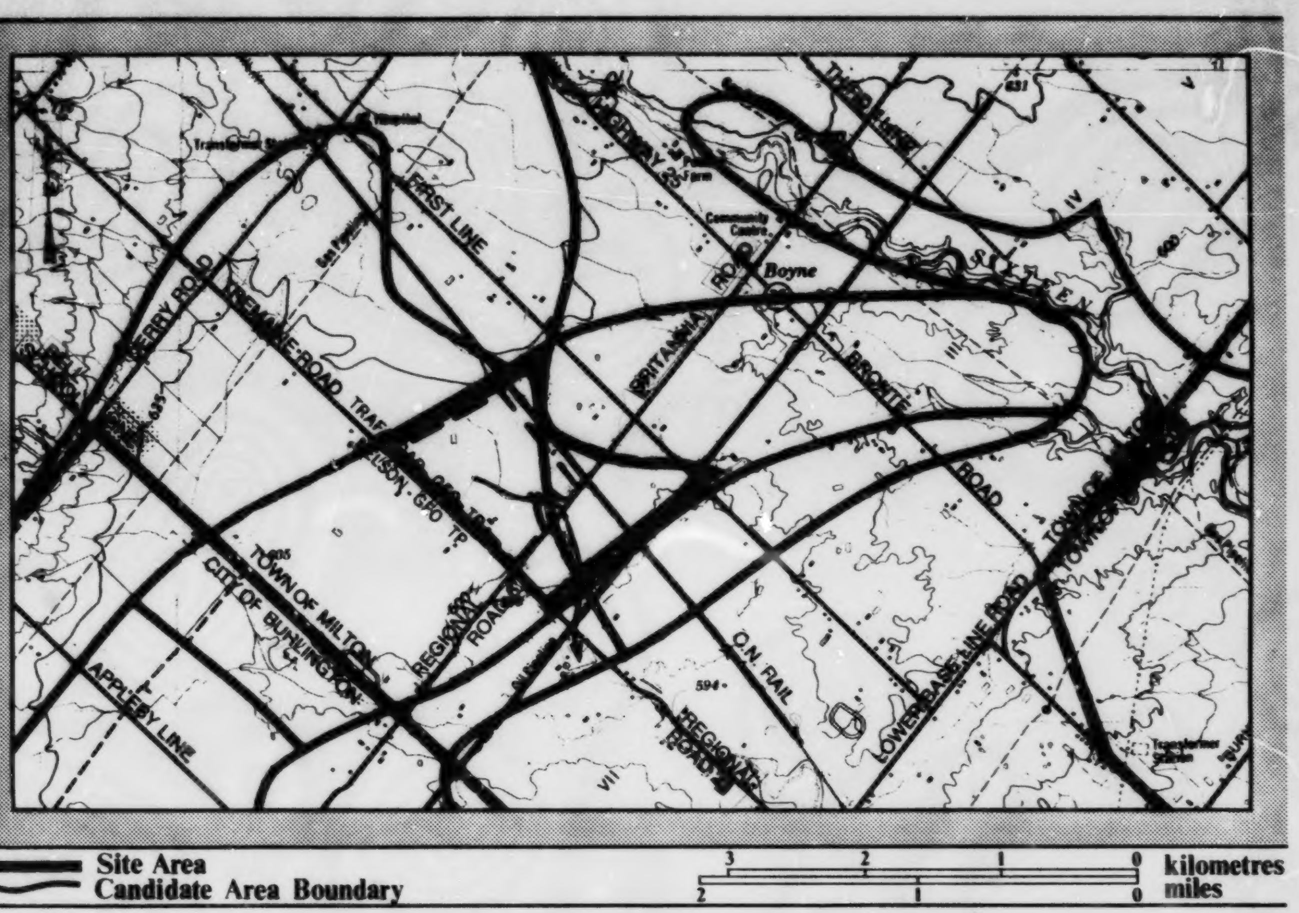
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-3A1


FIRST LINE
HIGHWAY 25
THIRD LINE
Farm
Community Centre
Boyne
BRITANNIA RD
BRONTE ROAD
DERRY ROAD
TREMAINE ROAD
TRAFALGAR
NELSON GEO TP
TOWN OF MILTON
CITY OF BURLINGTON
APPLEBY LINE
REGIONAL ROAD
O.N. RAIL
REGIONAL ROAD
LOWER BASE LINE ROAD
SIXTEEN
Transformer Station
Transformer Station
594
605
635
431
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

ite Constraints:

alton Region Road 6, a Canadian National Railways rail line and a
an Canadian Oil high pressure oil pipeline cross the site area. In
ddition a stream course is found in the southwest portion of the
ite area.

he remaining constraint-free area is not large enough for a
andfill or integrated facility.

djacent Constraints:

ite area expansion is constrained by candidate area boundaries to
he northwest and southeast, a stream course to the northeast and
alton Region Road 22 to the west.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

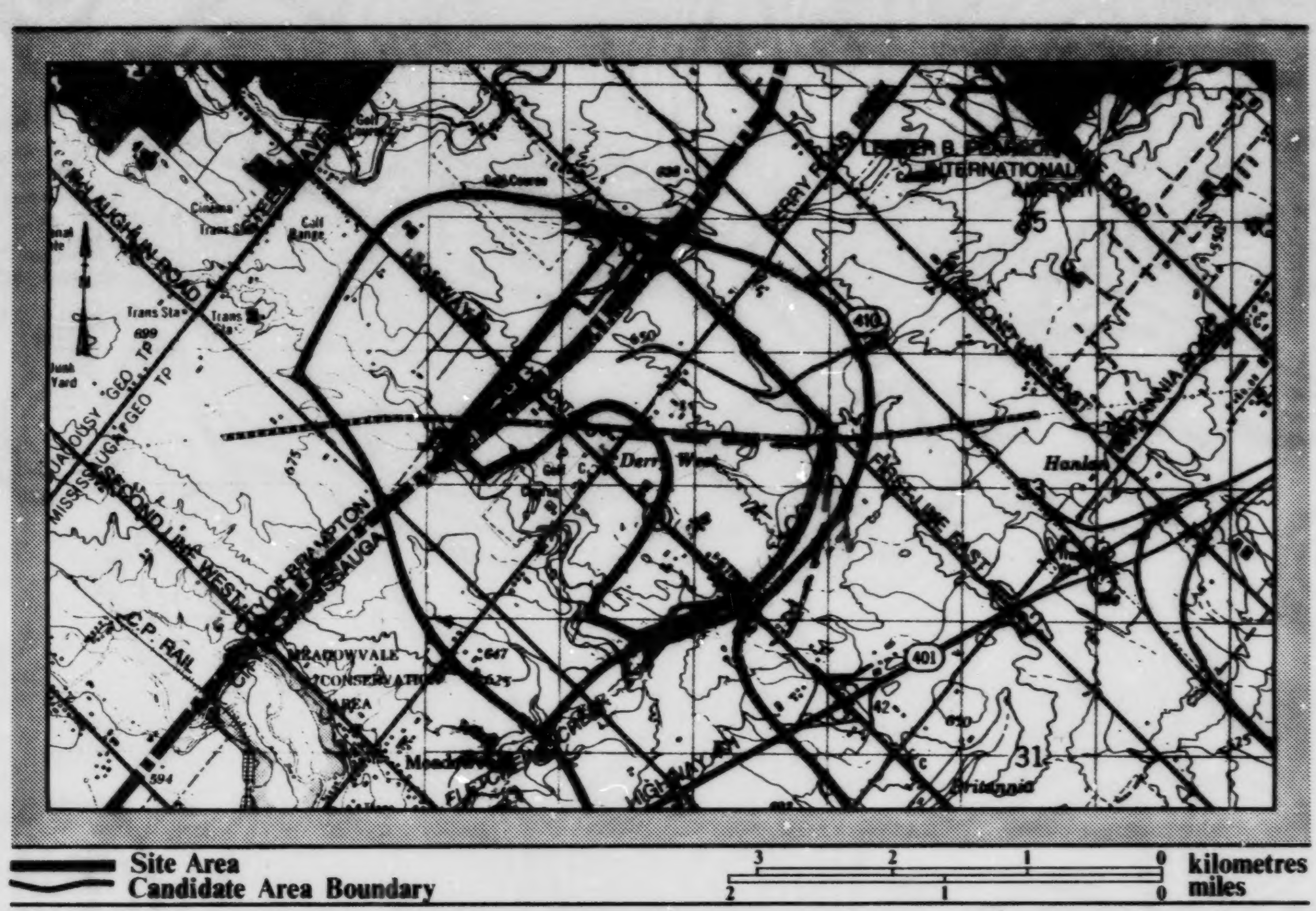
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-1N


LESTER B. PEARSON INTERNATIONAL AIRPORT
DERRY ROAD
HIGHWAY 10
410
401
SECOND LINE WEST
FIRST LINE EAST
SECOND LINE EAST
BRITANNIA ROAD
CITY OF BRAMPTON
CITY OF MISSISSAUGA
MEADOWVALE CONSERVATION AREA
C.P. RAIL
Derry West
Hanlan
Britannia
Golf Course
Trans Sta
Junk Yard
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by Peel Region Road 5 and Provincial Highway 10. Two Ontario Hydro transmission lines cross the site area. Stream courses occur in the east and south portions of the site area.

The portion of the site area east of Provincial Highway 10 and south of the Parkway Belt is designated Special Policy Area and proposed for industrial designation.

Preference was given to industrially designated locations. It was therefore decided to locate the facility south of Peel Region Road 5 and east of Provincial Highway 10. Hydro transmission lines crossing the site area may pose a constraint to site development. The area north of Peel Region Road 5 and south of the Parkway Belt (transportation and utility corridor) was too small and was dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a residential area and flood plain to the west; a moraine to the south; residential designated and vacant land to the north; and First Line East and site area LF-3N to the east.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

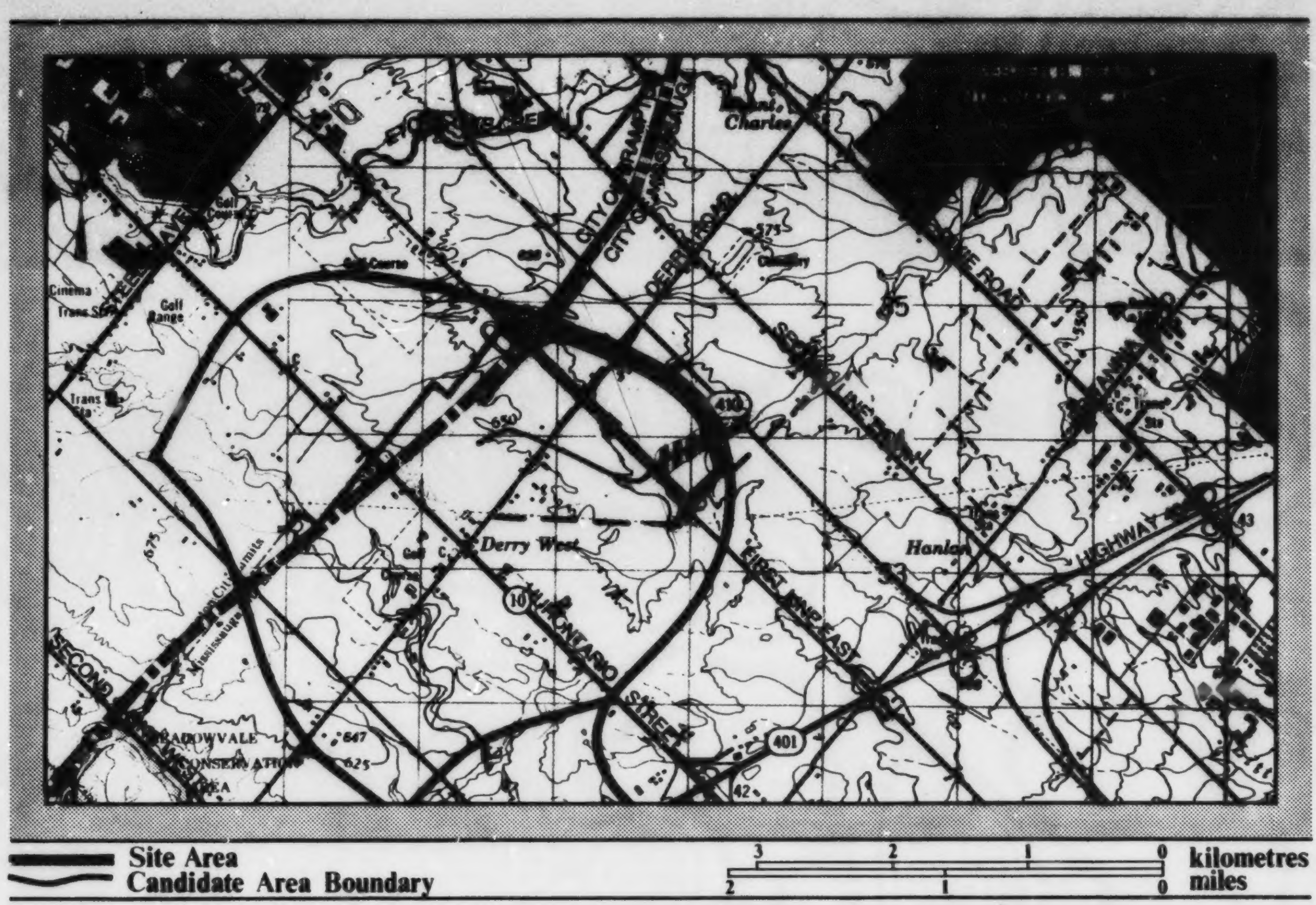
10. travel distance ☐
11. access routes ☐

LF-2N

Site Constraints:

Continued

The proximity of the site area to Lester B. Pearson International Airport will limit the development of the site to a landfill or landfill and physical/chemical treatment plant facility. The incinerator stack would conflict with airport operations.


Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles
Derry West
Hanlan
Charles
CITY OF BRAMPTON
CITY OF MISSISSAUGA
DERRY ROAD
HURONTARIO STREET
FIRST LINE EAST
SECOND LINE EAST
HIGHWAY
MEADOWVALE CONSERVATION AREA
Golf Course
Golf Range
Cinema
Trans Sta
Cemetery
410
10
401
43
42
575
650
647
625
675
85

Site Constraints:

The site area is crossed by Peel Region Road 5 and a floodplain/stream course. The remaining area is not large enough to accommodate a landfill or integrated facility.

The site area east of Highway 10 is proposed for industrial designation. Consideration was therefore given to extending the site area boundary to Second Line East to provide sufficient area for the facility. However, Provincial Highway 410 crosses the site area and an existing serviced industrial park is located between Provincial Highway 410 and Second Line East. This resulted in the elimination of LF-3N from further consideration.

Adjacent Constraints:

Expansion of the site area is restricted to the northeast by a candidate area boundary, Provincial Highway 410 and a serviced industrial park; to the southwest by a moraine; to the northwest by Peel Regional Road 10; and to the west by First Line East and site area LF-2N.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

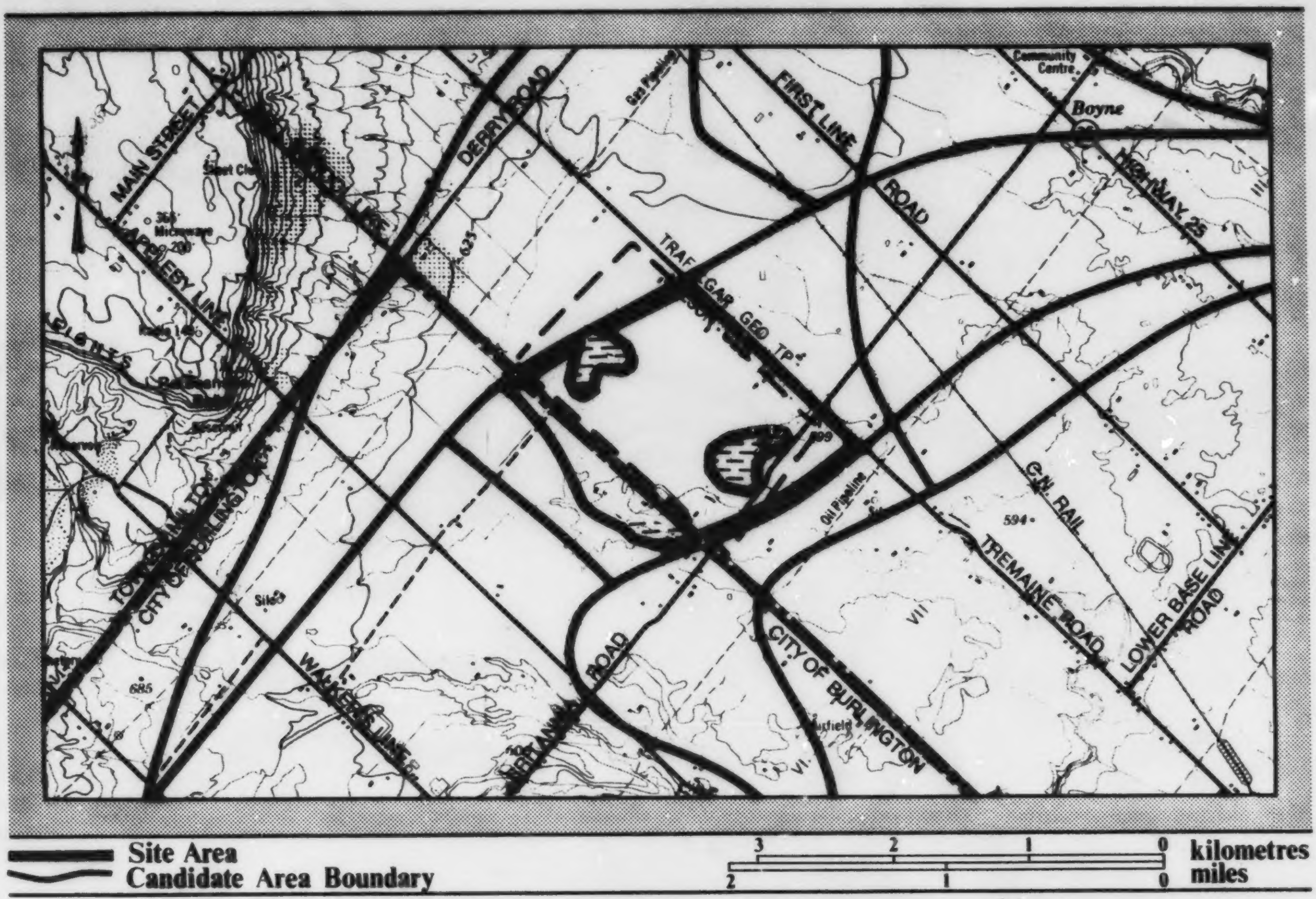
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-3N


MAIN STREET
DERRY ROAD
FIRST LINE
ROAD
HIGHWAY 25
Boyne
Community Centre
APPLEBY LINE
TRAFALGAR GEO TP
Gas Pipeline
Oil Pipeline
C.N. RAIL
TREMAINE ROAD
LOWER BASE LINE ROAD
CITY OF BURLINGTON
TOWN OF MILTON
WALKERS LINE
ROAD
594
625
685
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area is crossed by Halton Region Road 6. A wetland area occurs in the south and north portions of the site area.

The proximity of this site area to the Niagara Escarpment would restrict development to a landfill only and physical/chemical treatment plant facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Halton Region Road 22 to the east; candidate area boundaries to the north and south; and a stream course to the west.

Suitability Screen

1. size ☐
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

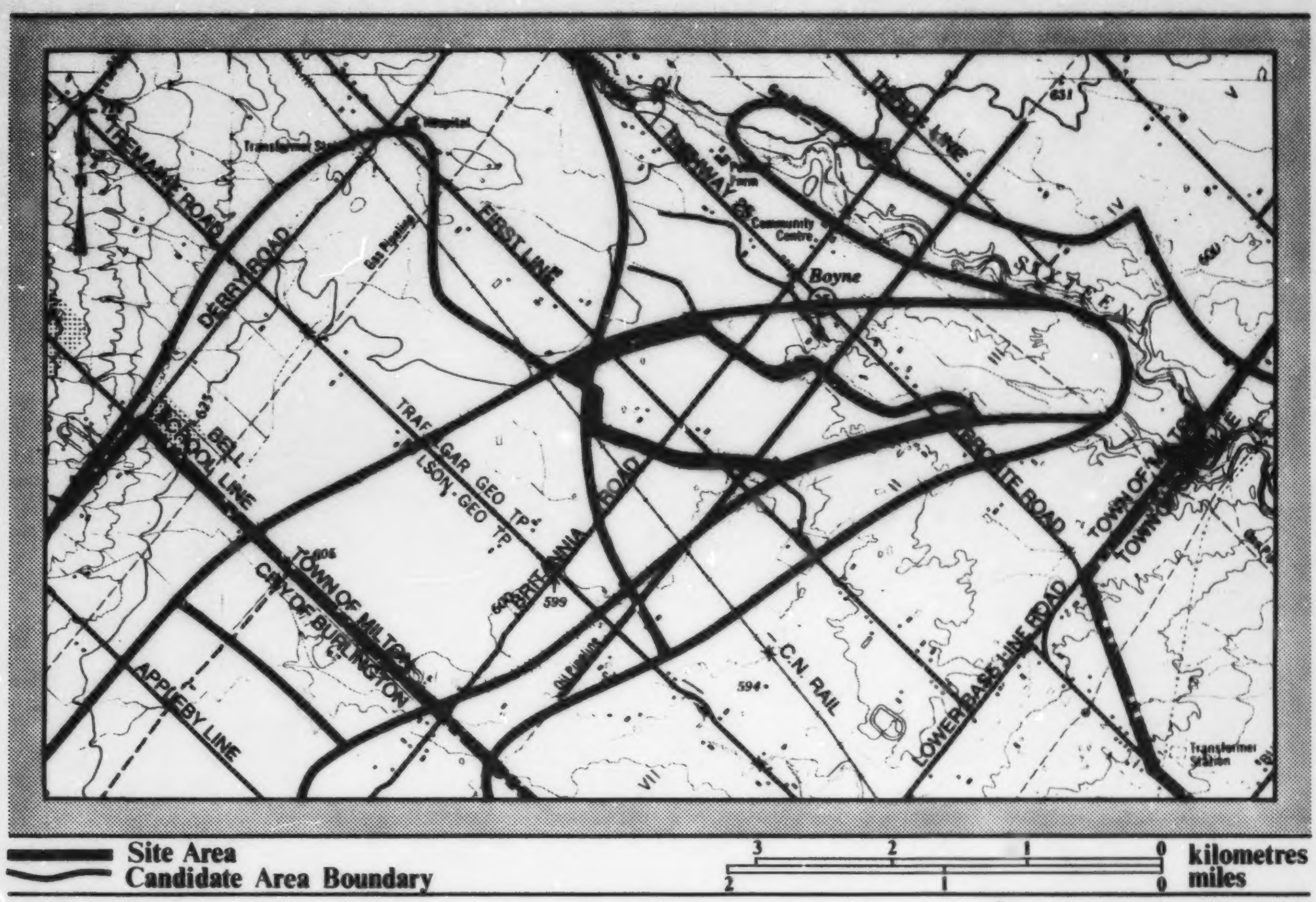
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-4N


TREMAINE ROAD
DERRY ROAD
FIRST LINE
HIGHWAY 25
THIRD LINE
Community Centre
Boyne
SIXTEEN
SCHOOL LINE
BELL
TRAFALGAR GEO TP
NELSON GEO TP
BRITANNIA ROAD
BRONTE ROAD
TOWN OF MILTON
CITY OF BURLINGTON
APPLEBY LINE
C.N. RAIL
LOWER BASE LINE ROAD
TOWN OF MILTON
TOWN OF OAKVILLE
Transformer Station
Gas Pipeline
Oil Pipeline
Hospital
599
594
606
I
II
III
IV
VII
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

This site area is crossed by Halton Region Road 6 and a Sun Canadian Oil high pressure oil pipeline.

The remaining unconstrained area is irregularly shaped and is not large enough to accommodate a landfill or integrated facility.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

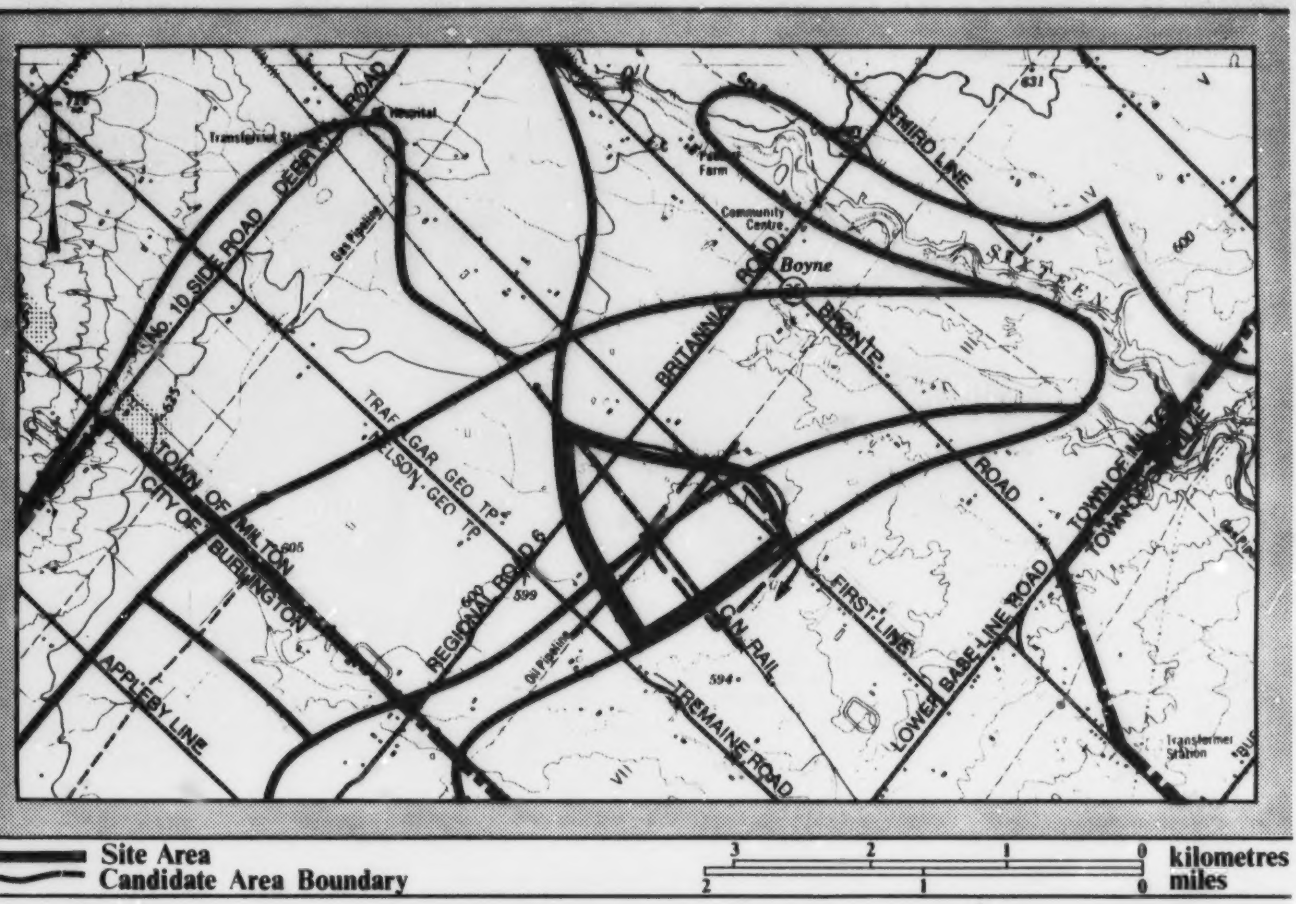
System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Expansion of the site area is limited by stream courses to the northeast and southwest and by candidate area boundaries to the north, south and west.

LF-5N


Site Area
Candidate Area Boundary
kilometres
miles
3
2
1
0
No. 10 SIDE ROAD
DERRY ROAD
Hospital
Gas Pipeline
Federal Farm
Community Centre
Boyne
THIRD LINE
SIXTEEN
BRITANNIA ROAD
BRONTE
TRAFALGAR GEO TP.
NELSON GEO TP.
TOWN OF MILTON
CITY OF BURLINGTON
REGIONAL ROAD 6
FIRST LINE
ROAD
LOWER BASE LINE ROAD
TOWN OF MILTON
C.N. RAIL
Oil Pipeline
APPLEBY LINE
TREMAINE ROAD
Transformer Station
631
600
605
625
599
594

ite Constraints:

he site area is crossed by a Sun Canadian Oil Limited high pressure il pipeline, a Canadian National Railways rail line and Halton egional Road 6.

he site area is located in an urban shadow area. It was combined ith PI-2N (also located in an urban shadow area). The combination f these two site areas will provide sufficient area in which to ocate a combined physical/chemical treatment plant and incinerator acility. A stream divides the two site areas, but the operations rea of the facility can be located within the constraint-free rea.

djacent Constraints:

xpansion of the combined site area boundaries is constrained by he candidate area boundary to the north, west and south, and a tream course and floodplain to the east and north.

Suitability Screen

1. size ☐
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

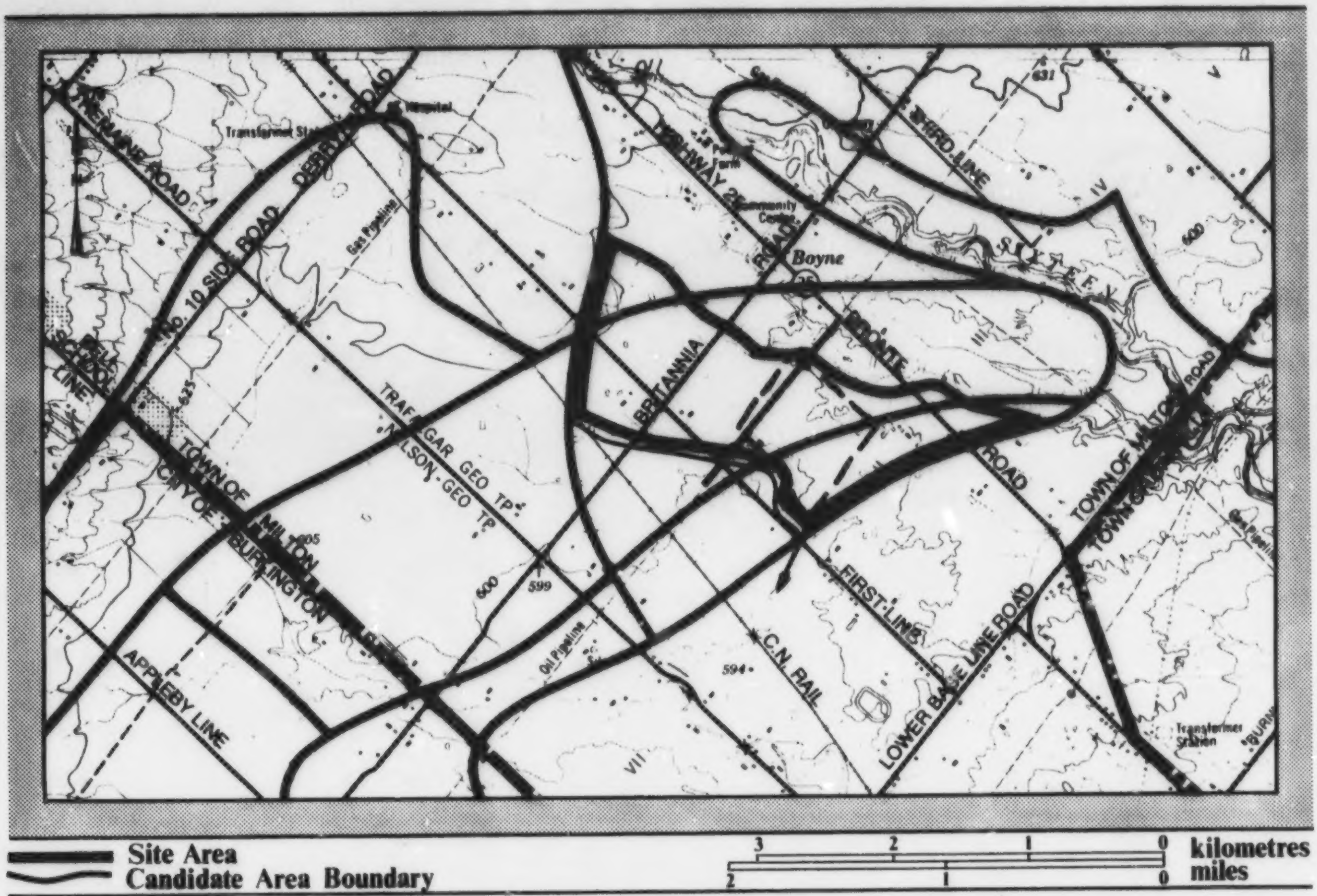
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-1N


TREMAINE ROAD
DERRY ROAD
Transformer Sta.
Hospital
No. 10 SIDE ROAD
BELL SCHOOL LINE
Gas Pipeline
HIGHWAY 25
ROAD
Community Centre
Boyne
25
THIRD LINE
SIXTEEN
631
600
IV
III
BRITANNIA
BRONTE
TRAFALGAR GEO TP
NELSON GEO TP
TOWN OF MILTON
CITY OF BURLINGTON
625
605
600
599
Oil Pipeline
C.N. RAIL
594
FIRST LINE
ROAD
LOWER BASE LINE ROAD
TOWN OF MILTON
TOWN OF OAKVILLE
ROAD
Gas Pipeline
Transformer Station
BURNHAMTHORPE
APPLEBY LINE
VII
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by Halton Region Road 6, Provincial Highway 25 and a Sun Canadian Oil Limited high pressure oil pipeline.

The site area is located in an urban shadow area. It was combined with PI-1N (also located in an urban shadow area). The combination of these two site areas will provide sufficient area in which to locate a combined physical/chemical treatment plant and incinerator facility. A stream divides the two site areas, but the operations area of the facility can be located within the constraint-free area.

Adjacent Constraints:

Expansion of the combined site area boundaries is constrained by the candidate area boundary to the north, west and south, and a stream course and floodplain to the east.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

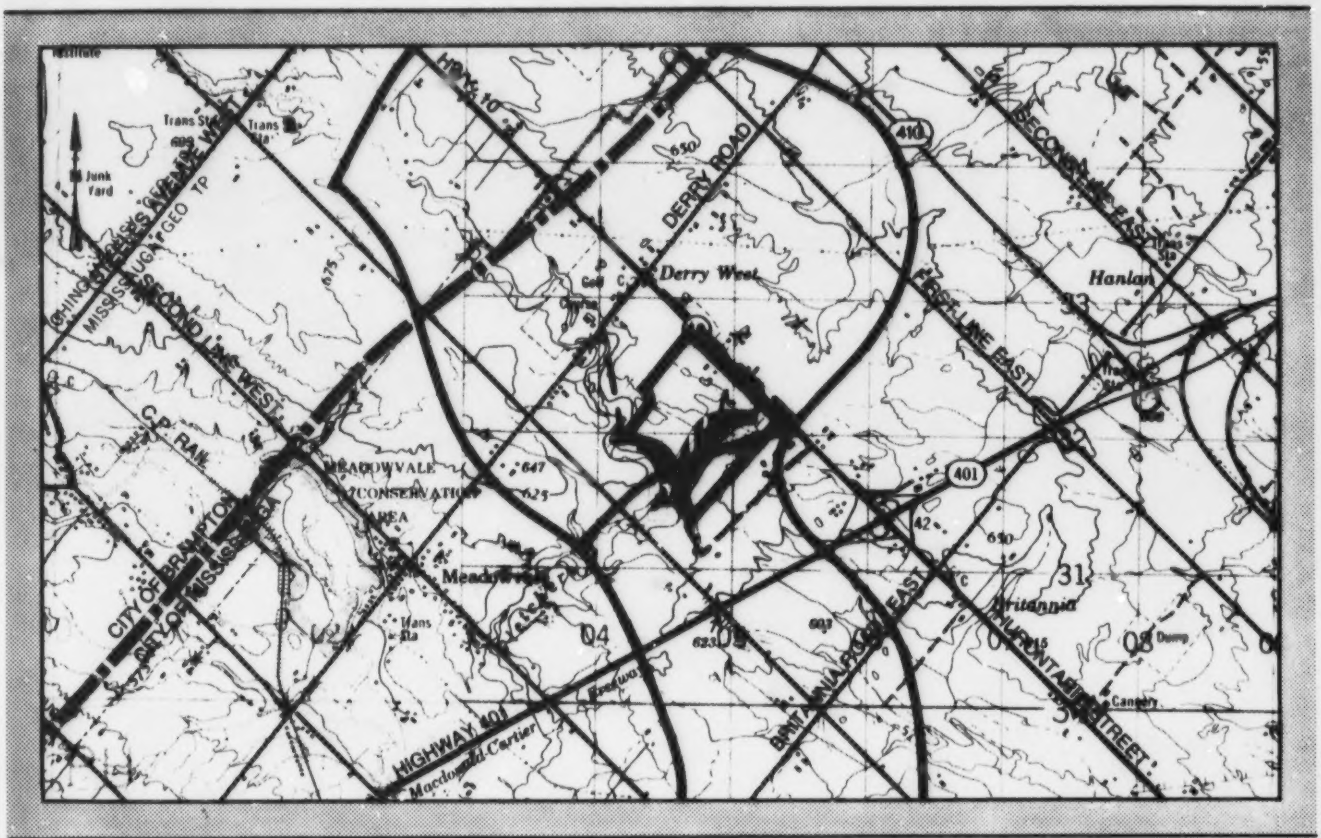
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-2N


HWY 10
DERRY ROAD
410
SECOND LINE WEST
MISSISSAUGA GEO TP
C.P. RAIL
CITY OF BRAMPTON
CITY OF MISSISSAUGA
MEADOWVALE CONSERVATION AREA
Meadowvale
Derry West
FIRST LINE EAST
BECONSFIELD LINE EAST
Hanlan
401
Britannia
HIGHWAY 401
Macdonald-Cartier Freeway
BRITANNIA ROAD EAST
HURONTARIO STREET
Junk Yard
Trans Sta
650
675
647
625
623
Site Area
Candidate Area Boundary
kilometres
miles
3
2
1
0
2
1
0

Site Constraints:

A stream course/floodplain occurs in the south portion of the site area.

The site area was determined to be unsuitable, as the incinerator stack of the facility would potentially conflict with airport operations at Lester B. Pearson International Airport.

Adjacent Constraints:

Adjusting the site area boundaries would not ameliorate the potential conflict with airport operations at Lester B. Pearson International Airport.

Suitability Screen

1. size ☐
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

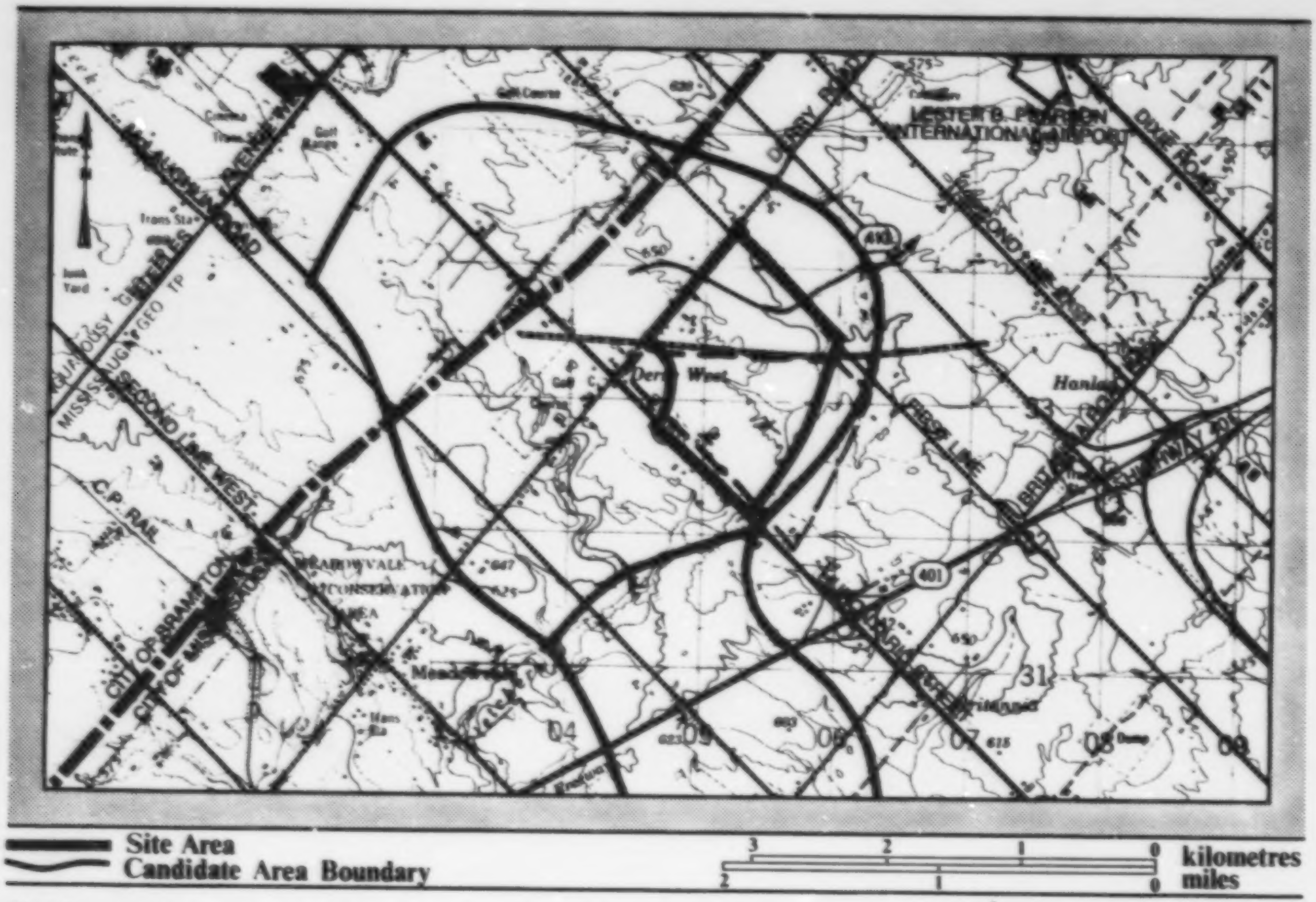
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-3N


LESTER B. PEARSON INTERNATIONAL AIRPORT
DIXIE ROAD
DERRY ROAD
410
SECOND LINE EAST
FIRST LINE
HIGHWAY 401
401
Derry West
Hanlan
MEADOWVALE CONSERVATION AREA
Meadowvale
CITY OF BRAMPTON
CITY OF MISSISSAUGA
C.P. RAIL
SECOND LINE WEST
MISSISSAUGA GEO TP
CHINGUACOUSY GEO TP
McLAUGHLIN ROAD
Golf Course
Golf Range
Trans Sta
04
05
06
07
08
09
31
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

An Ontario Hydro transmission line crosses the site area and stream courses occur in the north and central portions of the site area.

The site area was determined to be unsuitable as the incinerator stack of the facility would potentially conflict with airport operations at Lester B. Pearson International Airport.

Adjacent Constraints:

Adjusting the site area boundaries would not ameliorate the potential conflict with airport operations at Lester B. Pearson International Airport.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

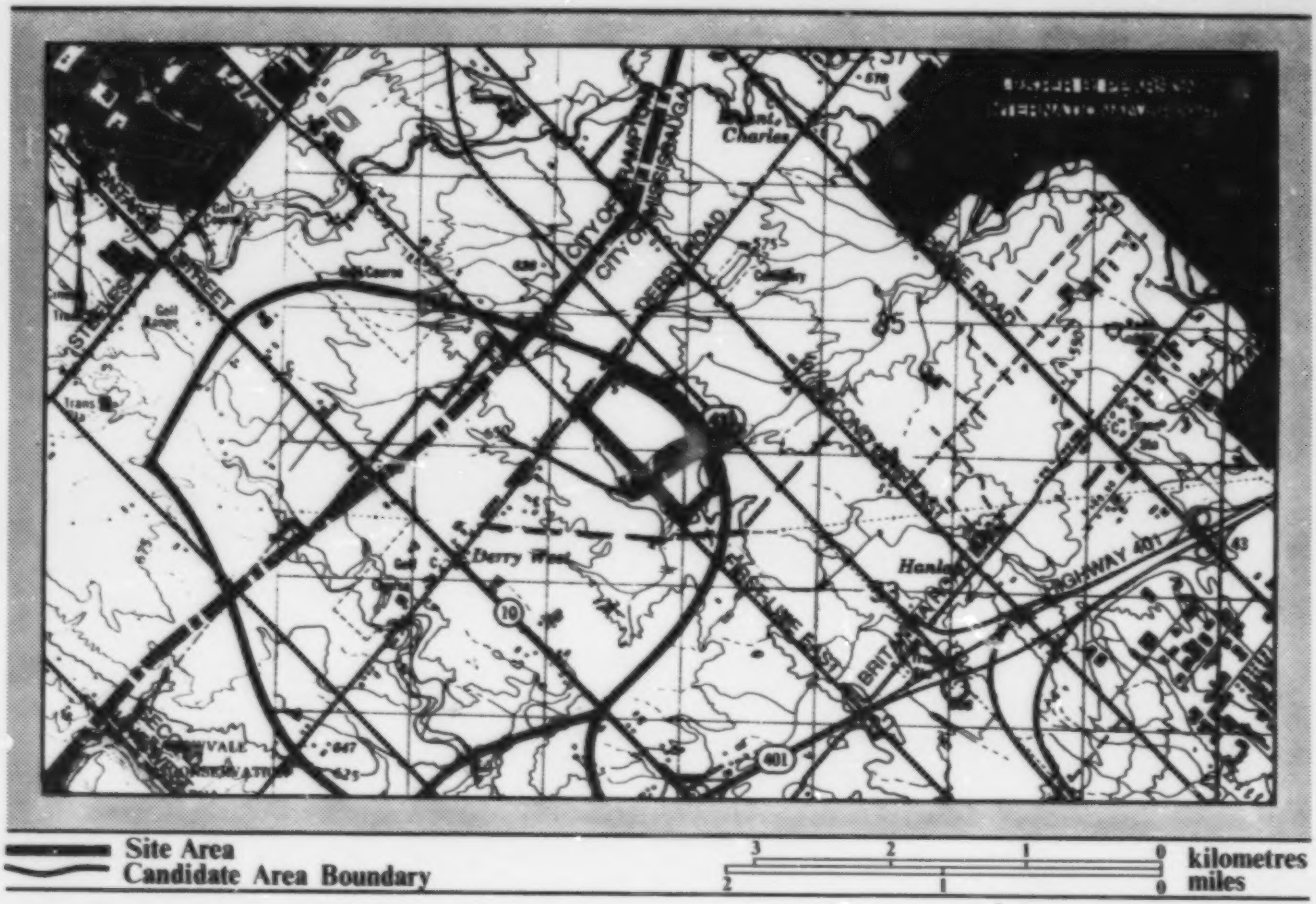
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-4N


CITY OF BRAMPTON
CITY OF MISSISSAUGA
DERRY ROAD
Mount Charles
STEELES
STREET
Golf Course
Derry West
Hanlan
HIGHWAY 401
401
10
575
650
647
625
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

A stream course/floodplain occurs in the southern portion of the site area.

The site area was determined to be unsuitable as the facility's incinerator stack would potentially conflict with airport operations at Lester B. Pearson International Airport.

Adjacent Constraints:

Adjusting the site area boundaries would not ameliorate the potential conflict with airport operations at Lester B. Pearson International Airport.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

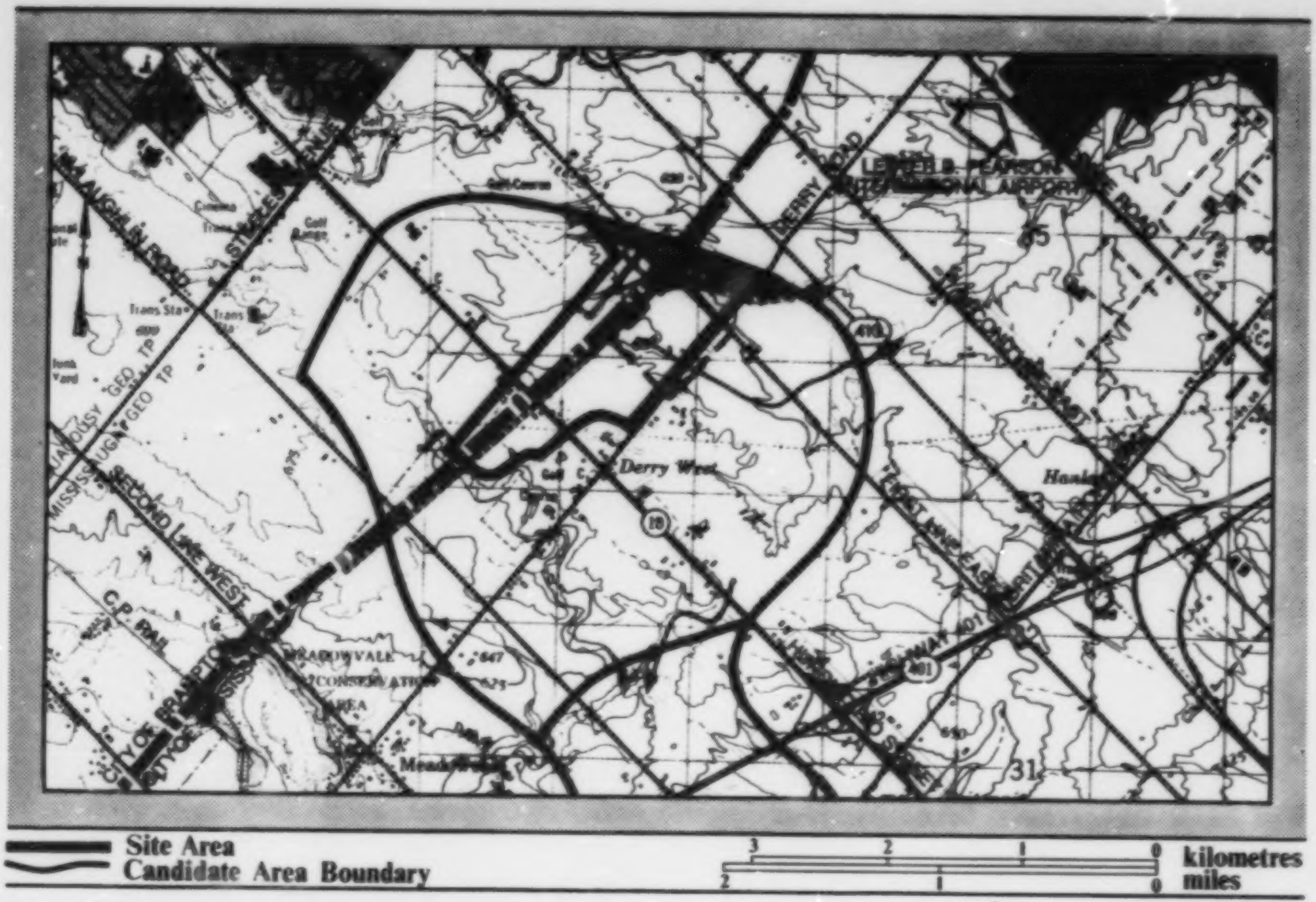
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-5N


LESTER B. PEARSON INTERNATIONAL AIRPORT
DERRY ROAD
Derry West
McLAUGHLIN ROAD
STEELES AVENUE
SECOND LINE WEST
SECOND LINE EAST
MISSISSAUGA GEO TP
C.P. RAIL
MEADOWVALE CONSERVATION AREA
CITY OF BRAMPTON
Meadowvale
Golf Course
Golf Range
Trans Sta
Hanlan
HIGHWAY 401
410
10
401
35
31
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A stream course occurs in the south portion of the site area and a stream course/floodplain crosses the northeast corner of the site area. An Ontario Hydro transmission line crosses the northwest portion of the site area.

The site area was determined to be unsuitable because the facility's incinerator stack would potentially conflict with airport operations at Lester B. Pearson International Airport.

Adjacent Constraints:

Adjusting the site area boundaries would not ameliorate the potential conflict with airport operations at Lester B. Pearson International Airport.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

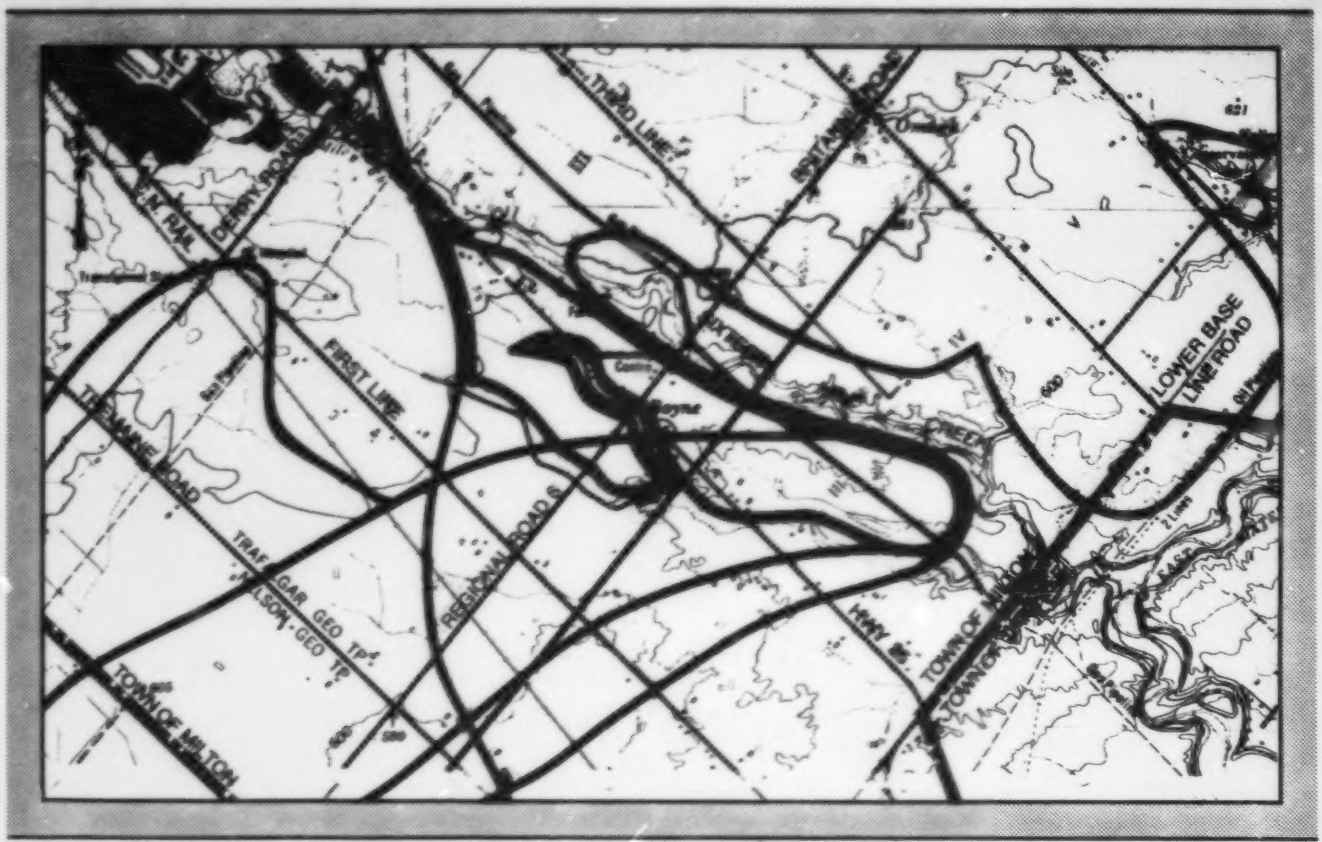
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-6N


C.N. RAIL
DERRY ROAD
THIRD LINE
BRITANNIA ROAD
FIRST LINE
TREMAINE ROAD
TRAFALGAR GEO TP
NELSON GEO TP
REGIONAL ROAD 6
HWY 25
TOWN OF MILTON
CREEK
LOWER BASE LINE ROAD
EAST

Site Area
Candidate Area Boundary

3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

This site area is crossed by Halton Region Road 6, Provincial Highway 25, a Sun Canadian Oil high pressure oil pipeline and a Union Gas high pressure gas pipeline.

The remaining constraint-free area is irregular in shape and will not accommodate a combined physical/chemical treatment plant and incinerator facility. Consideration was given to locating the operating area of the facility in the unconstrained area. However, the technical buffer would cross major transportation facilities or extend outside the candidate area.

Adjacent Constraints:

Expansion of the site area boundaries is limited by a floodplain and Significant Environmental Unit (SEU) 5-2 to the northwest; a floodplain to the southeast and candidate area boundaries to the north, east and west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

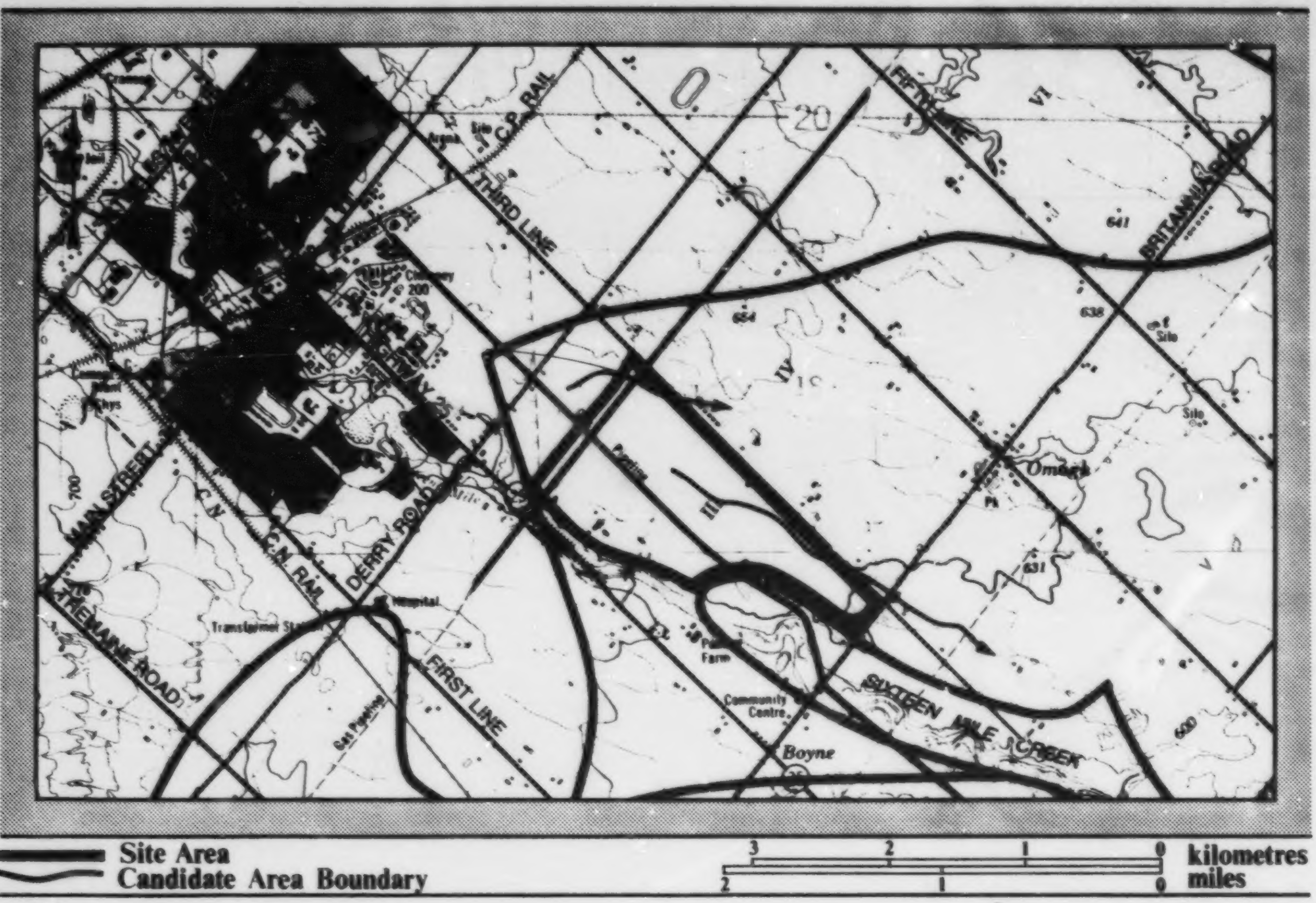
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-7N



C.P. RAIL
THIRD LINE
FIFTH LINE
BRITANNIA ROAD
20
641
638
654
631
600
700
Site
IV
V
VI
III
Omagh
MAIN STREET
C.N.
C.N. RAIL
DERRY ROAD
TREMAINE ROAD
Transformer Sta.
Hospital
FIRST LINE
Gas Pipeline
Community Centre
Boyne
Farm
SIXTEEN MILE CREEK
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Stream courses cross the southeast and northwest portions of the site area. Two Union Gas high pressure gas pipelines cross the site area.

The remaining constraint-free area is not large enough to accommodate a combined physical treatment plant and incinerator facility. Consideration was given to placing the operating area of the facility in the constraint-free area. However, the technical buffer could not be contained within the site area boundaries.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a residential area (Milton) to the northwest; Halton Regional Road 6 to the southwest; candidate area boundary and SEU 5-2 to the southwest; and Third Line and site area PI-15N to the northeast.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

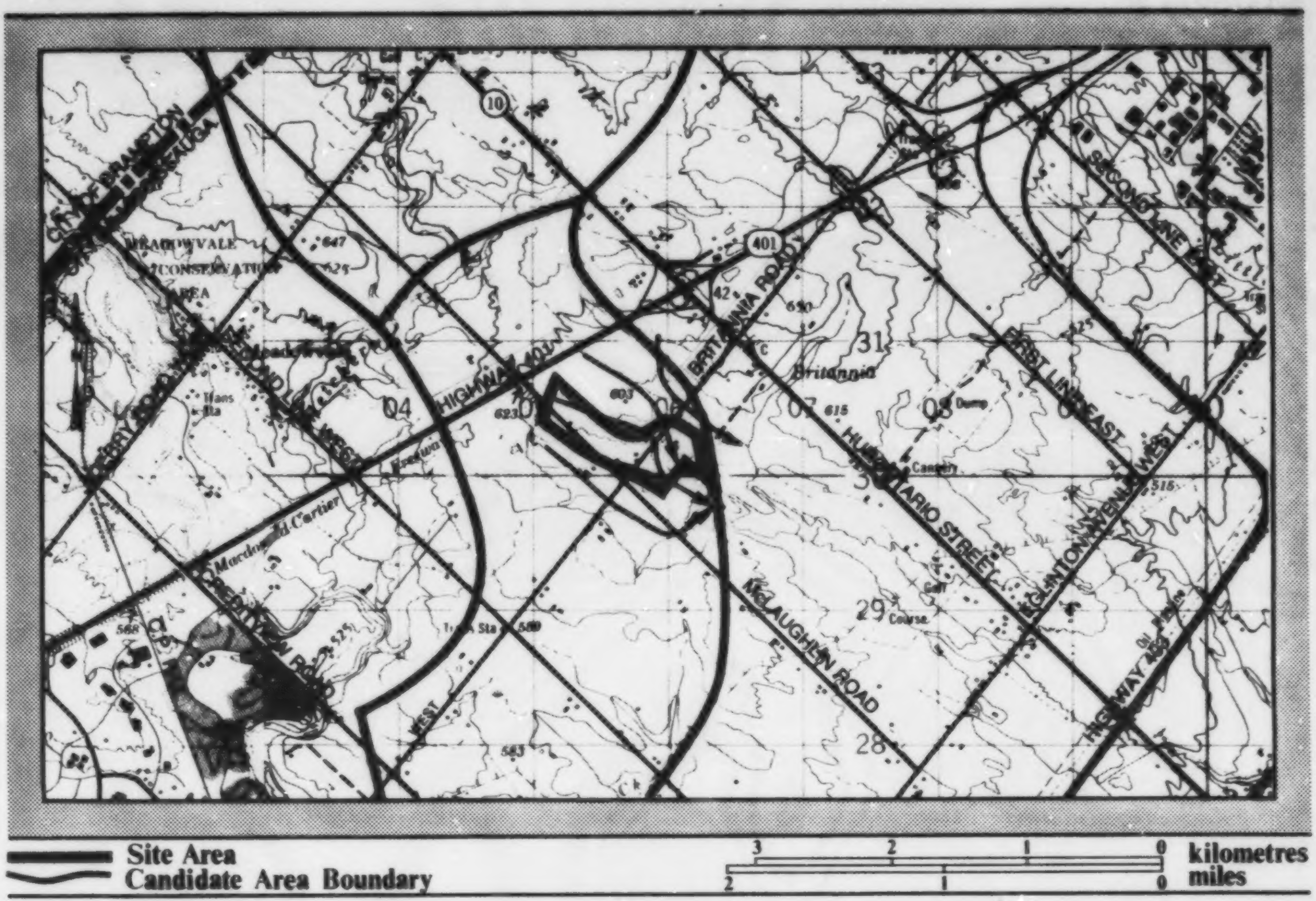
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-8N


CITY OF BRAMPTON
MISSISSAUGA
MEADOWVALE CONSERVATION AREA
10
401
HIGHWAY 401
BRITANNIA ROAD
Britannia
HURONTARIO STREET
FIRST LINE EAST
SECOND LINE EAST
EGLINTON AVENUE WEST
HIGHWAY 403
McLAUGHLIN ROAD
CREDITVIEW ROAD
DERRY ROAD
Macdonald-Cartier Freeway
04
31
29
28
Dump
Course
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The facility's incinerator stack would potentially conflict with airport operations at Lester B. Pearson International Airport and thus this site area was deemed to be unsuitable.

In addition, three stream courses are found within the site area. Peel Region Road 3 cross the site area.

Adjacent Constraints:

Adjusting the site area boundaries would not ameliorate the potential conflict with airport operations at Lester B. Pearson International Airport.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

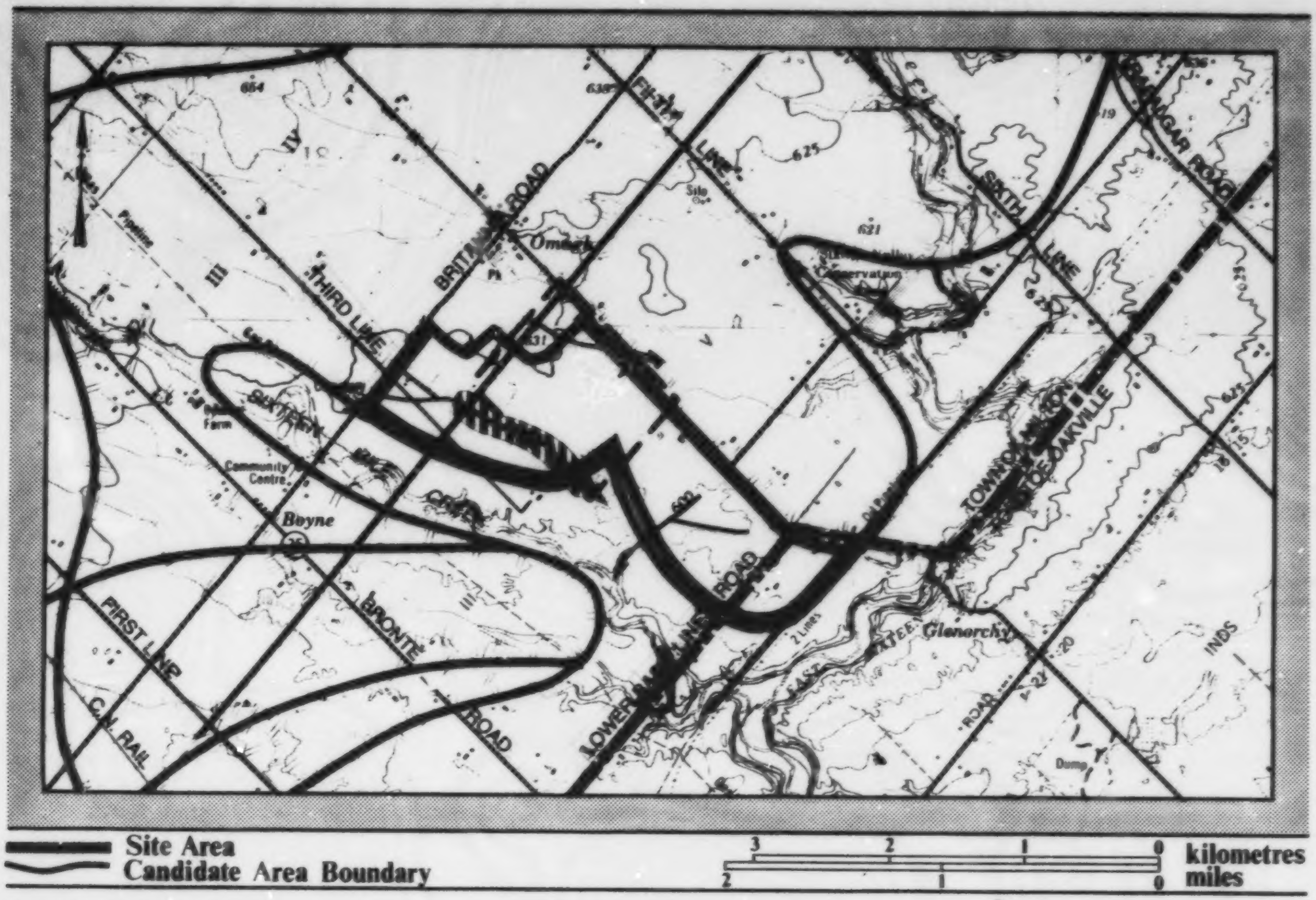
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-9N


FIFTH LINE
BRITANNIA ROAD
THIRD LINE
Omagh
Silo
Pipeline
Conservation
SIXTH LINE
TRAFALGAR ROAD
SIXTEEN MILE CREEK
Community Centre
Boyne
FIRST LINE
C.N. RAIL
BRONTE ROAD
LOWER BASE LINE ROAD
TOWN OF MILTON
TOWN OF OAKVILLE
EAST
Glenorchy
ROAD
Dump
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Two stream courses (one with a floodplain) cross the northwest portion and one crosses the south portion of the site area. A Sun Canadian Oil high pressure oil pipeline crosses the north portion of the site area.

There is sufficient constraint-free area in which to locate the operating area and technical buffer. The major constraint identified with PI-10N was agriculture.

The characteristics of this site area were compared to those possessed by other site areas in the same vicinity. It was concluded that there were other site areas in the same vicinity with more favourable agricultural characteristics (eg. urban shadow, industrial designation) and comparable advantages to PI-10N. PI-10N was dropped from further consideration.

Adjacent Constraints:

Adjustment of the site area boundaries was restricted to the northwest by Halton Regional Road 6; to the north by a residential area (Omagh); to the southeast by a candidate area boundary, to the southwest by a floodplain and SEU 5-2; and to the northeast by Fourth Line and site areas PI-11N and PI-12N

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☒
6. social ☐
7. transportation ☒

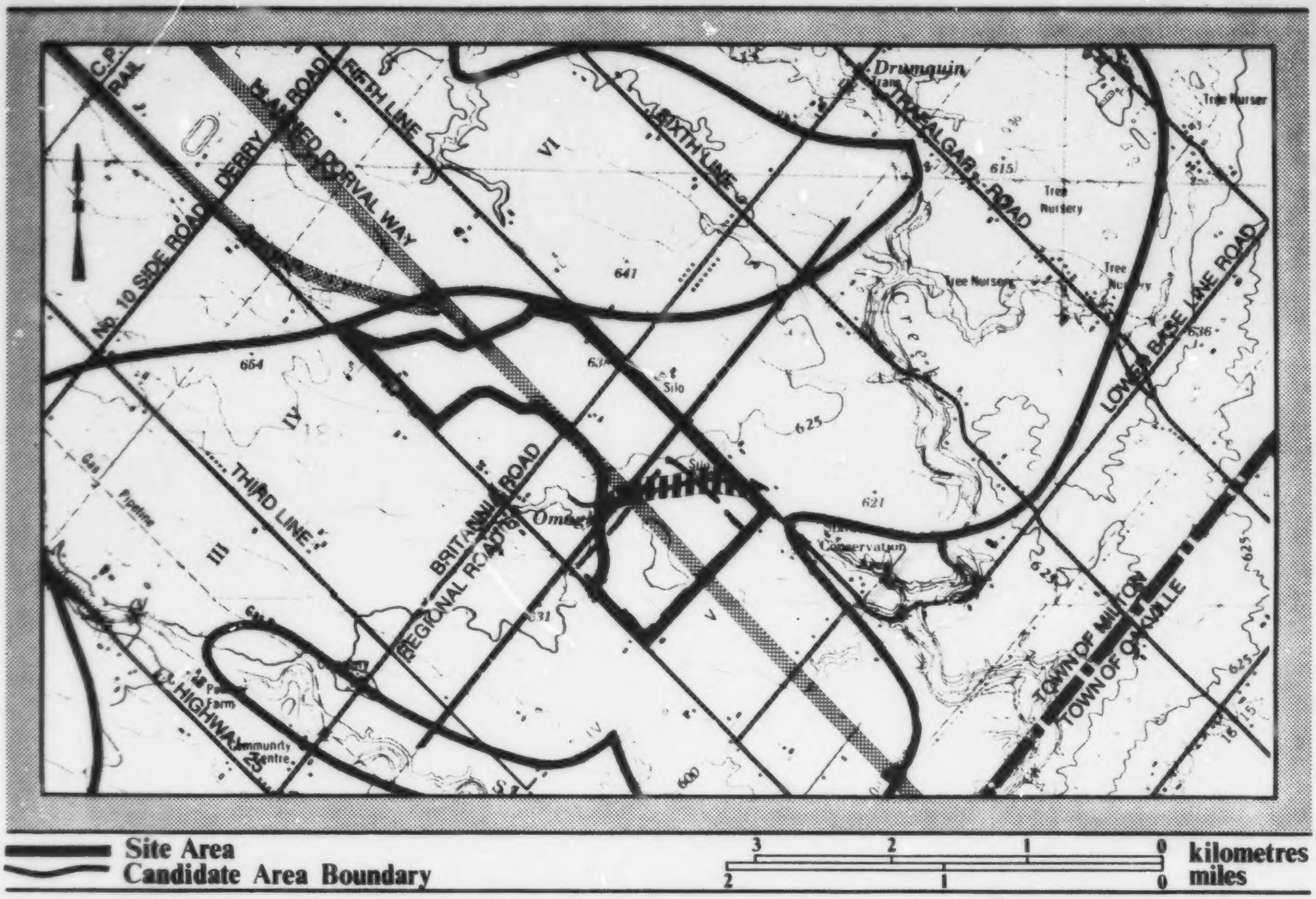
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-10N


C.P. RAIL
PLANNED DORVAL WAY
DERRY ROAD
FIFTH LINE
SIXTH LINE
Drumquin
TRAFALGAR ROAD
615
Tree Nursery
Tree Nursery
Tree Nursery
Tree Nursery
Tree Nursery
LOWER BASE LINE ROAD
636
No. 10 SIDE ROAD
VI
641
654
634
Silo
625
IV
THIRD LINE
Gas Pipeline
III
BRITANNIA ROAD
REGIONAL ROAD 6
Omagh
621
Conservation
625
625
V
631
TOWN OF MILTON
TOWN OF OAKVILLE
625
625
HIGHWAY 25
Pauper Farm
Community Centre
600
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is bisected by the planned Dorval Way.

In addition, the site area is crossed by Halton Region Road 6 and a Sun Canadian Oil Limited high pressure oil pipeline and stream course/floodplain.

There is insufficient area in which to locate a combined physical/chemical treatment plant and incinerator facility. Consideration was given to locating the operating area of the facility in the constraint-free area. However, the technical buffer would extend across major transportation facilities.

Adjacent Constraints:

Expansion of the site area boundaries is restricted to the north by a stream course and SEU 5-1; to the west by a residential area (Omagh); to the east by Fourth Line Road and the boundary of site area PI-15N; and to the south by the boundary of site area PI-12N.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☒
5. agriculture ☐
6. social ☐
7. transportation ☒

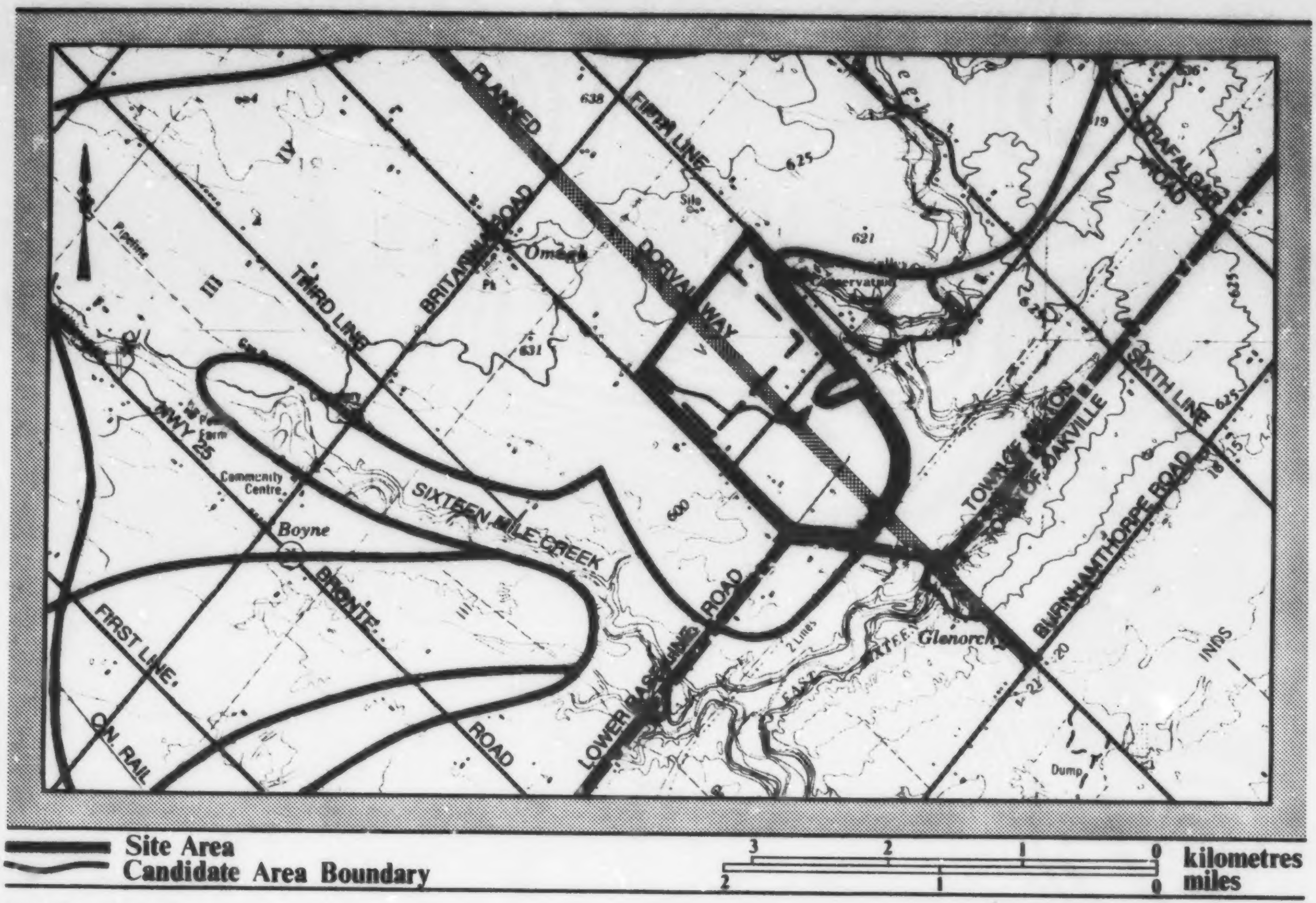
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-11N


PLANNED
FIFTH LINE
638
625
Site
DORVAL WAY
BRITANNIA ROAD
Omagh
THIRD LINE
Pipeline
631
621
TRAFALGAR ROAD
SIXTH LINE
TOWN OF MILTON
TOWN OF OAKVILLE
BURNHAMTHORPE ROAD
SIXTEEN MILE CREEK
HWY 25
Community Centre
Boyne
BRONTE ROAD
FIRST LINE
CN RAIL
LOWER BASE LINE ROAD
600
Glenorchy
Dump
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is bisected by the planned Dorval Way. It is also crossed in the southwest portion by a stream course.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility. Consideration was given to locating the operating area of the facility in the constraint-free area. However, the technical buffer would extend across major transportation facilities.

Adjacent Constraints:

Site area expansion is limited to the southwest by Fourth Line and the boundary of site area PI-10N; to the northeast by a candidate area boundary, SEU 5-2 and Fifth Line and the site area boundaries of PI-13N and PI-14N; and to the north by the boundaries of site area PI-11N.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☒
5. agriculture ☐
6. social ☐
7. transportation ☒

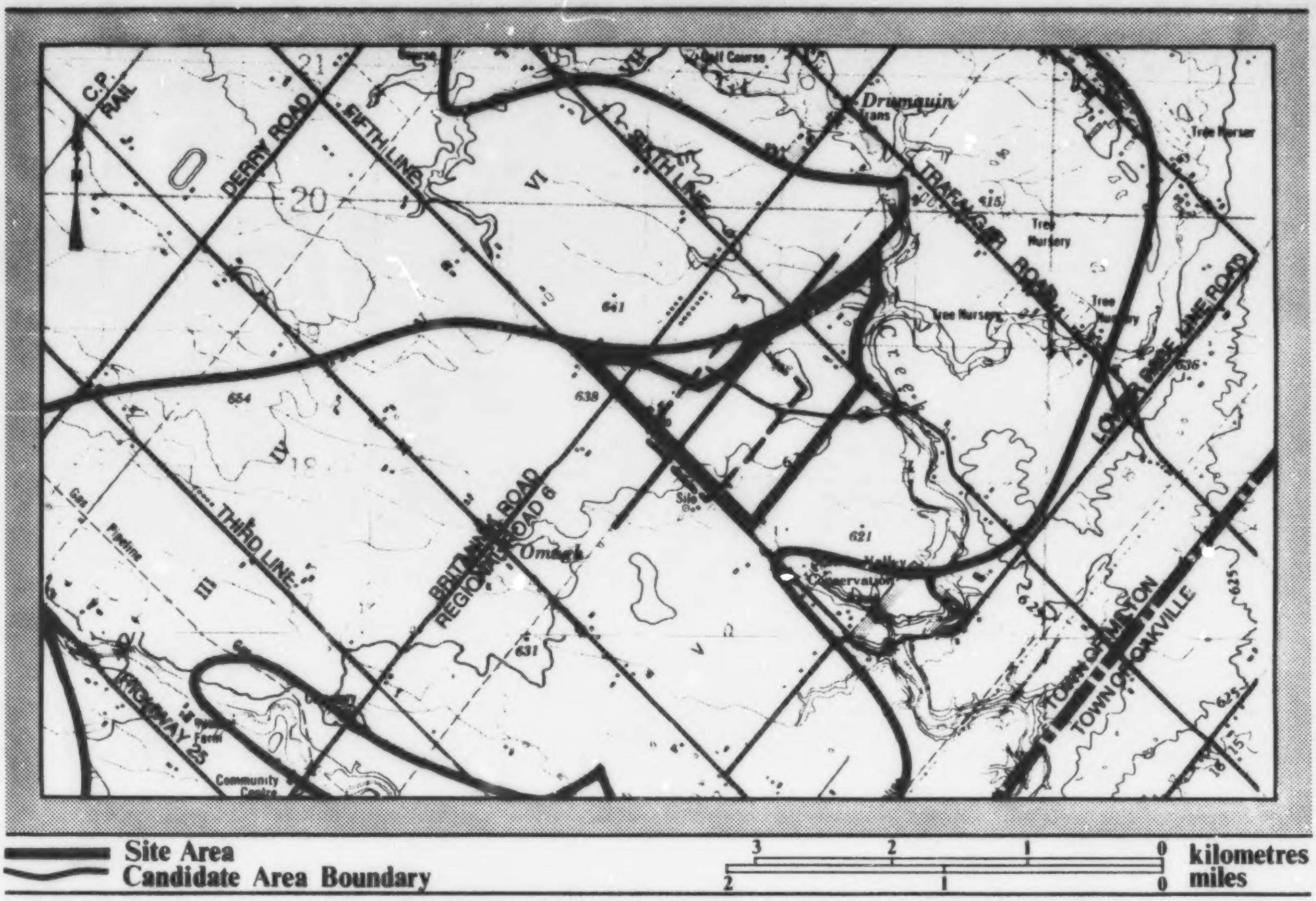
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-12N


C.P. RAIL
DERRY ROAD
FIFTH LINE
SIXTH LINE
Golf Course
Drumquin
TRAFALGAR ROAD
Tree Nursery
LOWER BASE LINE ROAD
654
638
641
621
631
636
THIRD LINE
Gas Pipeline
BRITANNIA ROAD
REGIONAL ROAD 6
Omagh
Silo
Conservation
HIGHWAY 25
Community Centre
TOWN OF MILTON
TOWN OF OAKVILLE
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A Sun Canadian Oil Limited high pressure oil pipeline crosses the north portion of the site area. Halton Regional Road 6 also crosses the north portion of the site area. A stream course occurs in the east portion of the site area.

The south portion of the site area is largely publicly-owned. It was combined with the north portion of PI-14N (which was also largely publicly-owned). The combination of these two site areas provided sufficient constraint-free area in which to locate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Expansion of the combined site area boundaries is restricted by a residential area and a candidate area boundary to the north; a floodplain and SEU 5-1 to the east; a candidate area boundary to the south; and Fifth Line and the site area boundaries of PI-11N and PI-2N to the west.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

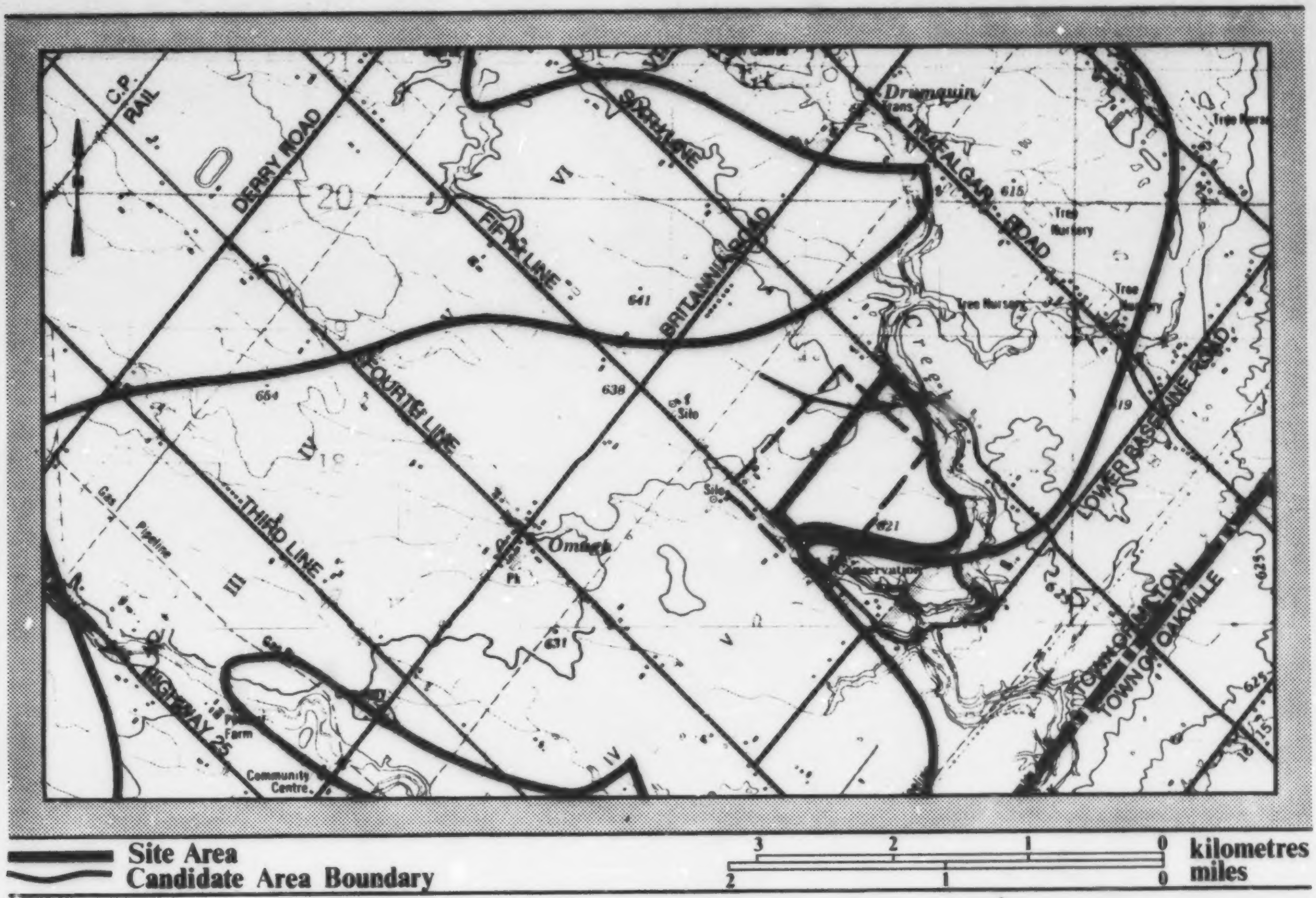
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-13N


C.P. RAIL
DERRY ROAD
SIXTH LINE
FIFTH LINE
FOURTH LINE
THIRD LINE
BRITANNIA ROAD
TRAFALGAR ROAD
LOWER BASELINE ROAD
HIGHWAY 25
Drumquin
Omagh
Tree Nursery
Gas Pipeline
Farm
Community Centre
Silo
Conservation
Creek
TOWN OF MILTON
TOWN OF OAKVILLE
VI
IV
III
V
20
19
641
638
654
615
631
621
619
625
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A stream course crosses the north portion of the site area.

The north portion of the site area is largely publicly-owned. It was combined with the south portion of PI-13N (also largely publicly-owned). The combination of these two site areas provides sufficient constraint-free area in which to locate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Expansion of the combined site area boundaries is restricted by a residential area and a candidate area boundary to the north; a floodplain and SEU 5-1 to the east; a candidate area boundary to the south; and Fifth Line and the site area boundaries of PI-11N and PI-12N to the west.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

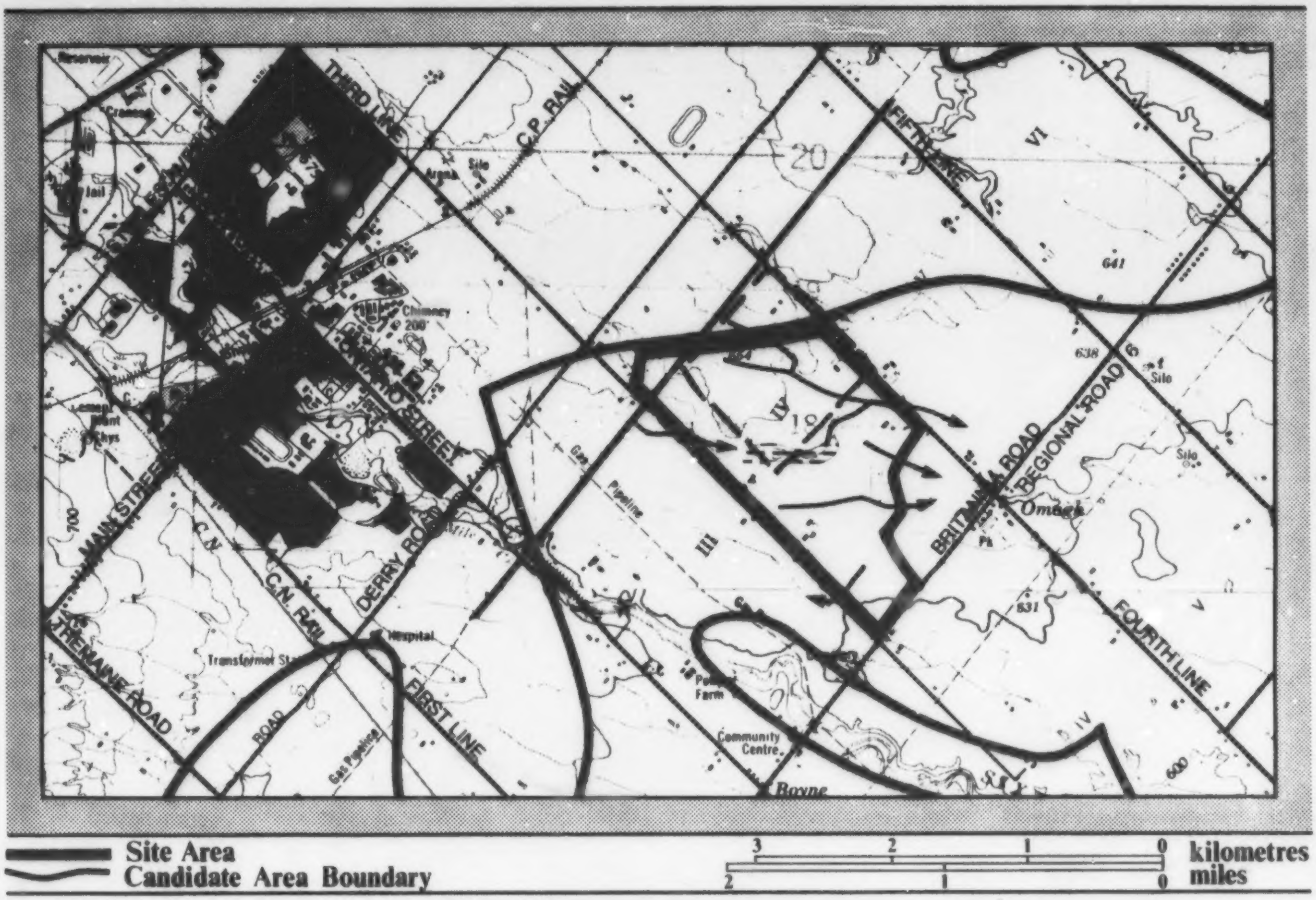
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-14N


Reservoir
THIRD LINE
C.P. RAIL
Arena
Site
Jail
FIFTH LINE
VI
20
641
Chimney 200'
ONTARIO STREET
638
BRITANNIA ROAD
REGIONAL ROAD 6
Silo
Omagh
IV
III
V
MAIN STREET
700
C.N.
C.N. RAIL
DERRY ROAD
Gas Pipeline
Hospital
Transformer Sta
TREMAINE ROAD
ROAD
FIRST LINE
FOURTH LINE
631
600
Farm
Community Centre
Boyne
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A Union Gas high pressure gas pipeline crosses the northwest portion of the site area. Several stream courses and a wetland occur within the site area.

A potential constraint is imposed by nearby sensitive receptors (Milton) and a potential long-term conflict exists with future residential areas. Therefore the site area was dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by the candidate area boundary to the north; a residential area (Milton) to the northwest; Third Line and the site area boundary of PI-8N to the west; Halton Regional Road 6 to the south; a residential area (Omagh) to the southeast; and Fourth Line and the site area boundary of PI-11N to the east.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☐
4. land use ☑
5. agriculture ☐
6. social ☑
7. transportation ☑

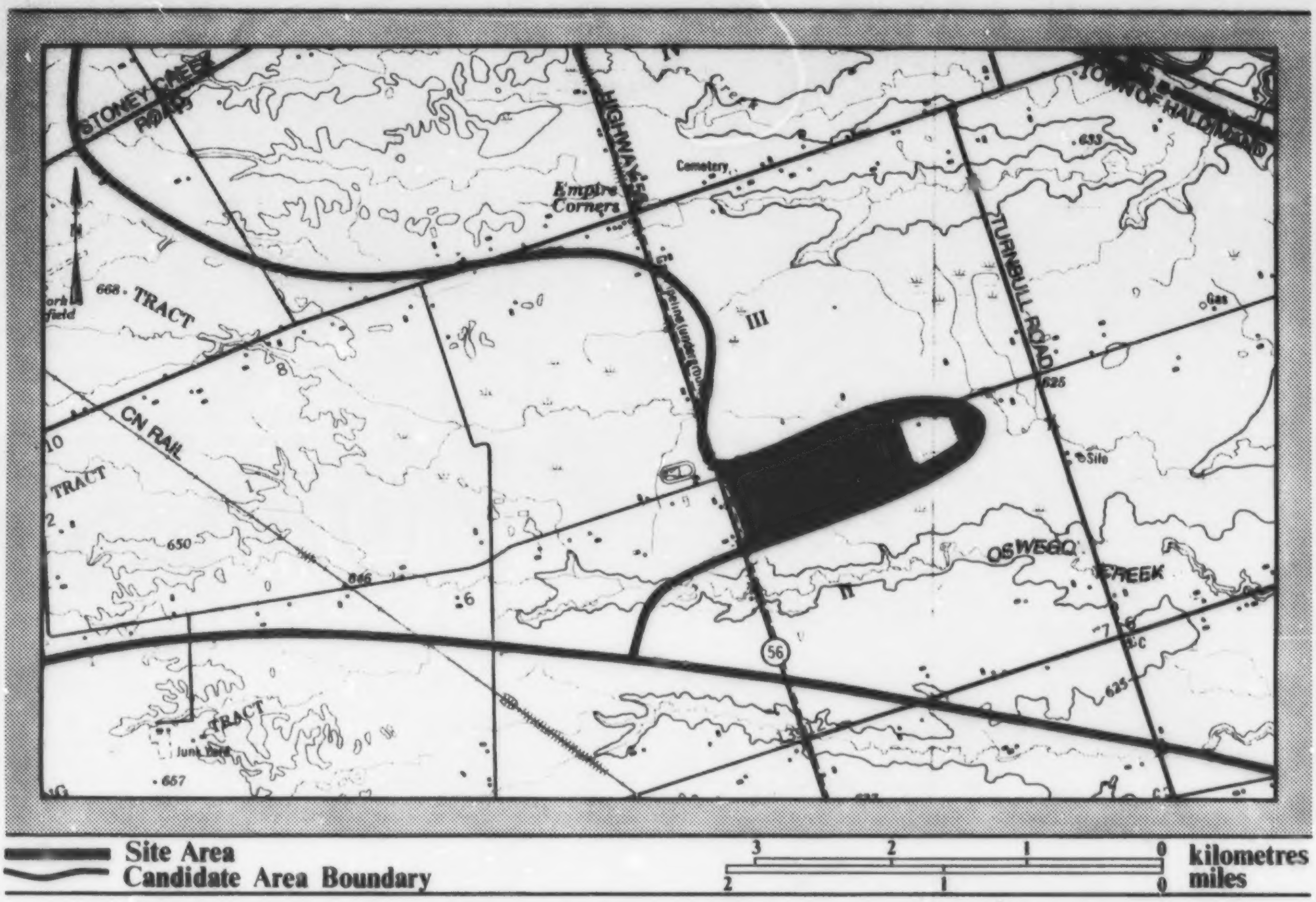
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-15N


STONEY CREEK ROAD
HIGHWAY 56
TOWN OF HALDIMAND
Cemetery
Empire Corners
N
668
TRACT
III
TURNBULL ROAD
Gas
8
CN RAIL
625
10
TRACT
Silo
2
650
OSWEGO CREEK
6
II
7
56
625
TRACT
Junk Yard
657
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is constrained by agricultural exclusionary factors Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality).

Sufficient unconstrained area does not remain to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries to accommodate the required site size is restricted by candidate area boundaries to the north, south and east, and by Provincial Highway 56 and a Union Gas high pressure gas pipeline to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☒
6. social ☐
7. transportation ☐

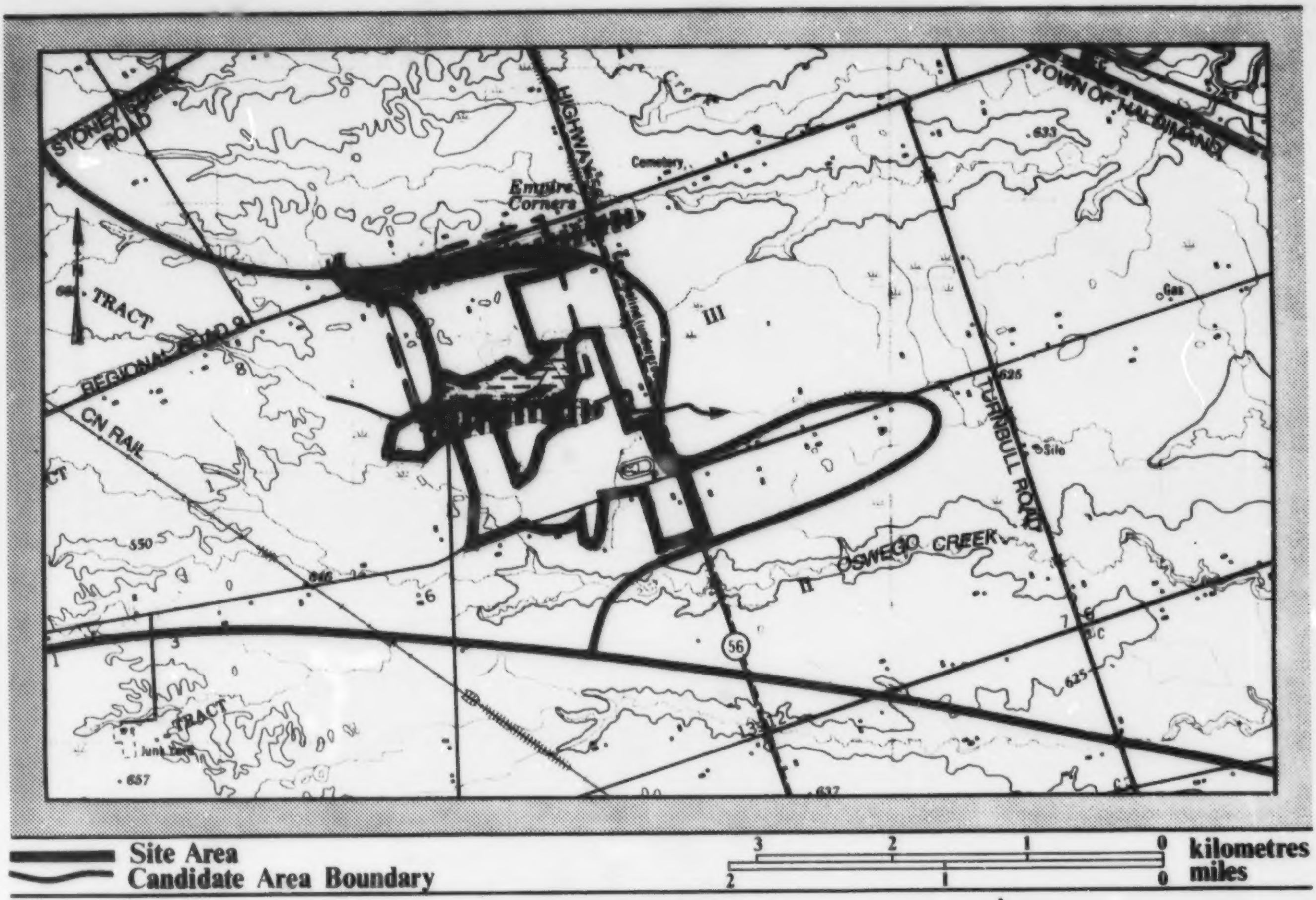
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-1W


STONEY CREEK ROAD
HIGHWAY 56
Cemetery
Empire Corners
TOWN OF HALDIMAND
633
TRACT
REGIONAL ROAD 9
CN RAIL
III
Gas
625
TURNBULL ROAD
Silo
OSWEGO CREEK
II
550
646
56
625
TRACT
Junk Yard
657
637
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Two stream course/floodplains are found on site. One is located in the north portion of the site area and the second is located in the centre of the site area. Seneca Unity Elementary School is located on the north boundary of the site area.

The remaining unconstrained area is irregularly shaped and is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

The expansion of site area boundaries is precluded by a drumlin field, a residential area at Empire Corners and the candidate area boundary to the north; agricultural factors Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the northeast, west and south; and Provincial Highway 56 to the east.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☐

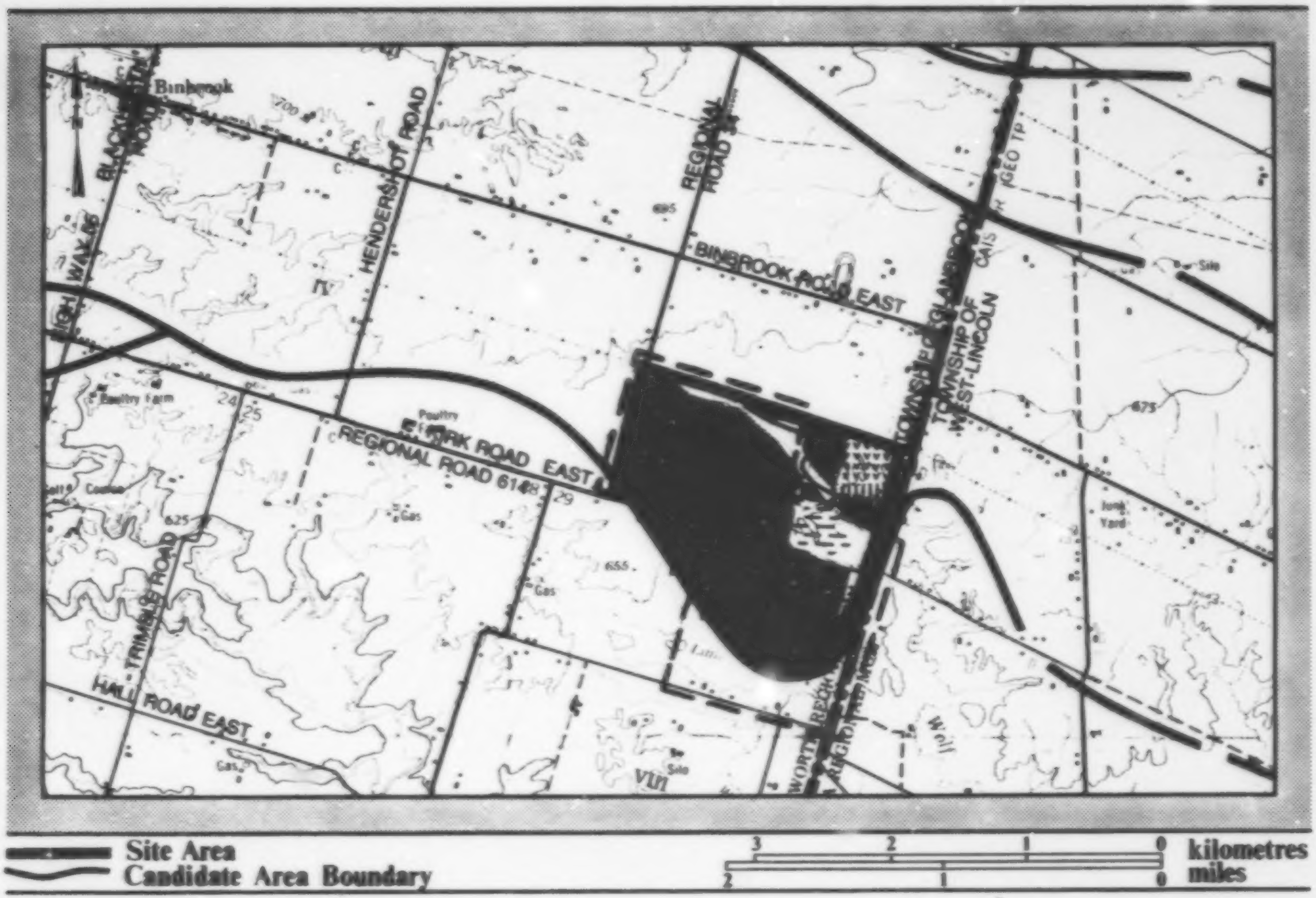
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-2W


Binbrook
BLACKHEATH ROAD
HIGHWAY 56
HENDERSHOT ROAD
REGIONAL ROAD 14
BINBROOK ROAD EAST
TOWNSHIP OF GLANBROOK
TOWNSHIP OF WEST-LINCOLN
FORK ROAD EAST
REGIONAL ROAD 61
TRIMBLE ROAD
HALL ROAD EAST
Poultry Farm
Junk Yard
Gas
Silo
Well
700
685
675
655
625
24
25
28
29
IV
VIII
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is constrained by agricultural exclusionary factors Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) within the site area boundaries. A residential area is located along the eastern boundary of the site area. A wetland area and a floodplain also occur within the site area boundaries.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 1 or 2 row crops or corn-wheat to the west; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north and west; to the east by a residential area and a candidate area boundary; and to the south by a candidate area boundary.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☐
4. land use ☑
5. agriculture ☑
6. social ☐
7. transportation ☐

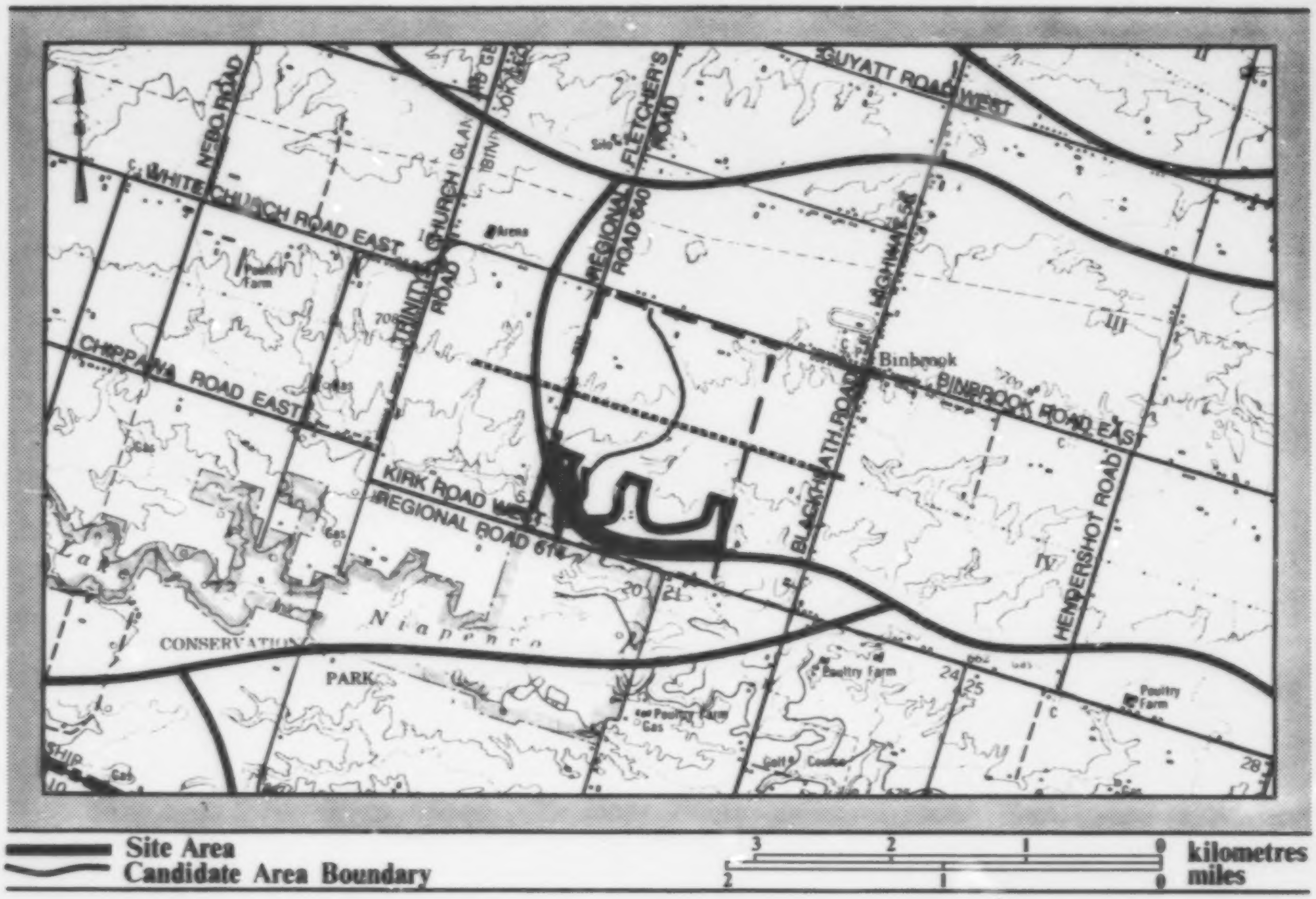
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-3W


GUYATT ROAD WEST
NEBO ROAD
WHITE CHURCH ROAD EAST
TRINITY CHURCH ROAD
REGIONAL ROAD 640
FLETCHER'S ROAD
HIGHWAY 56
Binbrook
BINBROOK ROAD EAST
CHIPPAWA ROAD EAST
KIRK ROAD WEST
REGIONAL ROAD 618
BLACKHEATH ROAD
HENDERSHOT ROAD
Lake Niapenco
CONSERVATION
PARK
Poultry Farm
Gas
Golf Course
Site Area
Candidate Area Boundary
kilometres
miles
3
2
1
0
2
1
0

Site Constraints:

The site area is crossed by a floodplain and by Hamilton-Wentworth Region Road 640.

Adjacent Constraints:

Expansion of the site area boundaries to provide sufficient size is restricted by an "urban settlement" designation and a moraine to the north; the candidate area boundary to the west and south; and a residential area (Binbrook) to the east.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

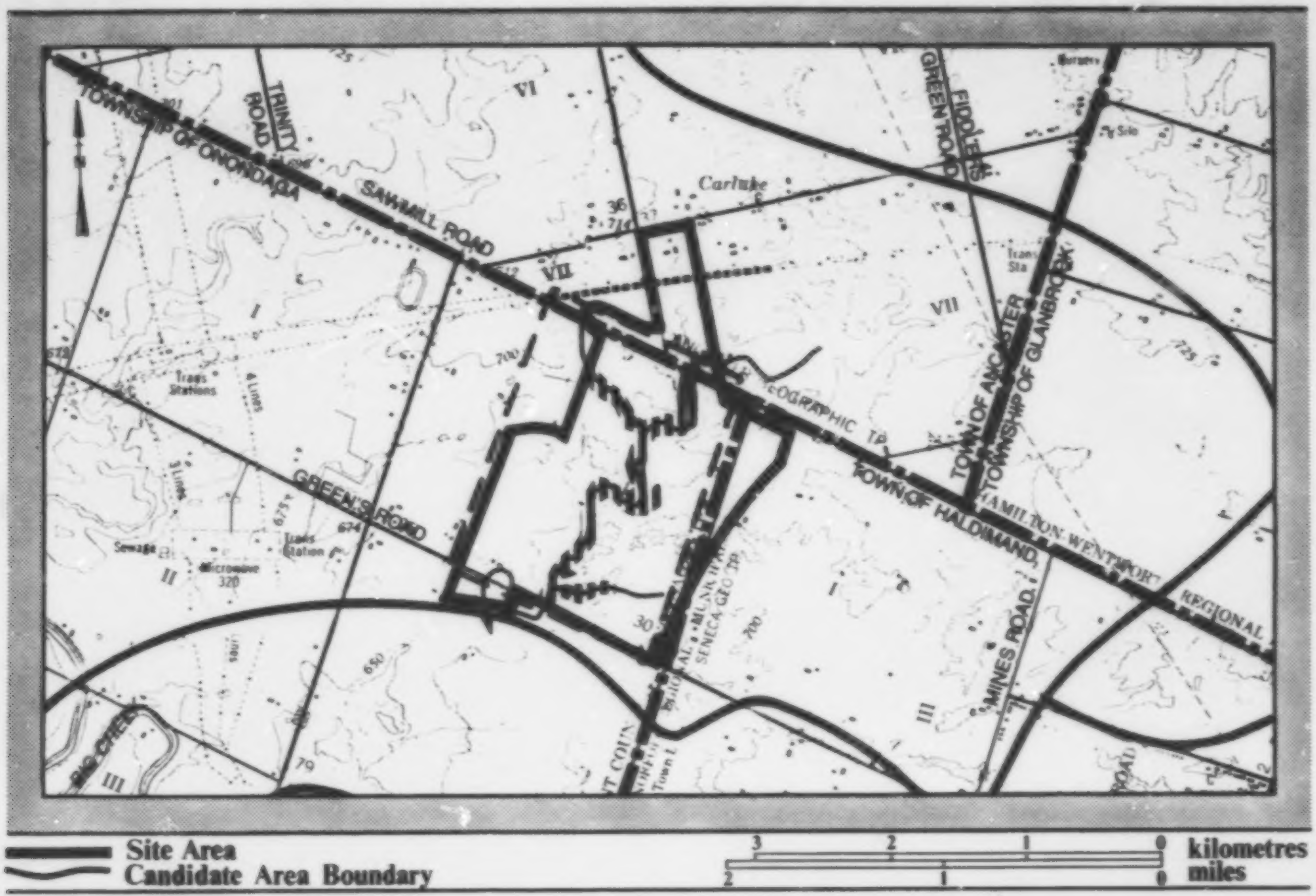
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-4W


TOWNSHIP OF ONONDAGA
TRINITY ROAD
SAWMILL ROAD
GREEN ROAD
FIDDLERS
Carluke
VI
VII
I
II
III
GREEN'S ROAD
TOWN OF ANCASTER
TOWNSHIP OF GLANBROOK
TOWN OF HALDIMAND
HAMILTON-WENTWORTH REGIONAL
MINES ROAD
Trans Stations
Trans Station
Sewage
Microwave 320
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area is crossed by a floodplain. An Ontario Hydro transmission corridor crosses the north portion of the site area.

The size of the constraint free area which remains is insufficient to accommodate a landfill or integrated facility.

Adjacent Constraints:

Site area boundaries could not be expanded because of the presence of a drumlin field to the east and southeast; Class 3 row crops or corn-wheat to the northeast; Class 1 and 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the east and southeast; Class 1 or 2 row crops or corn-wheat to the west; Class 3 row crops or corn-wheat and specialty crops to the north; and a candidate area boundary to the south.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

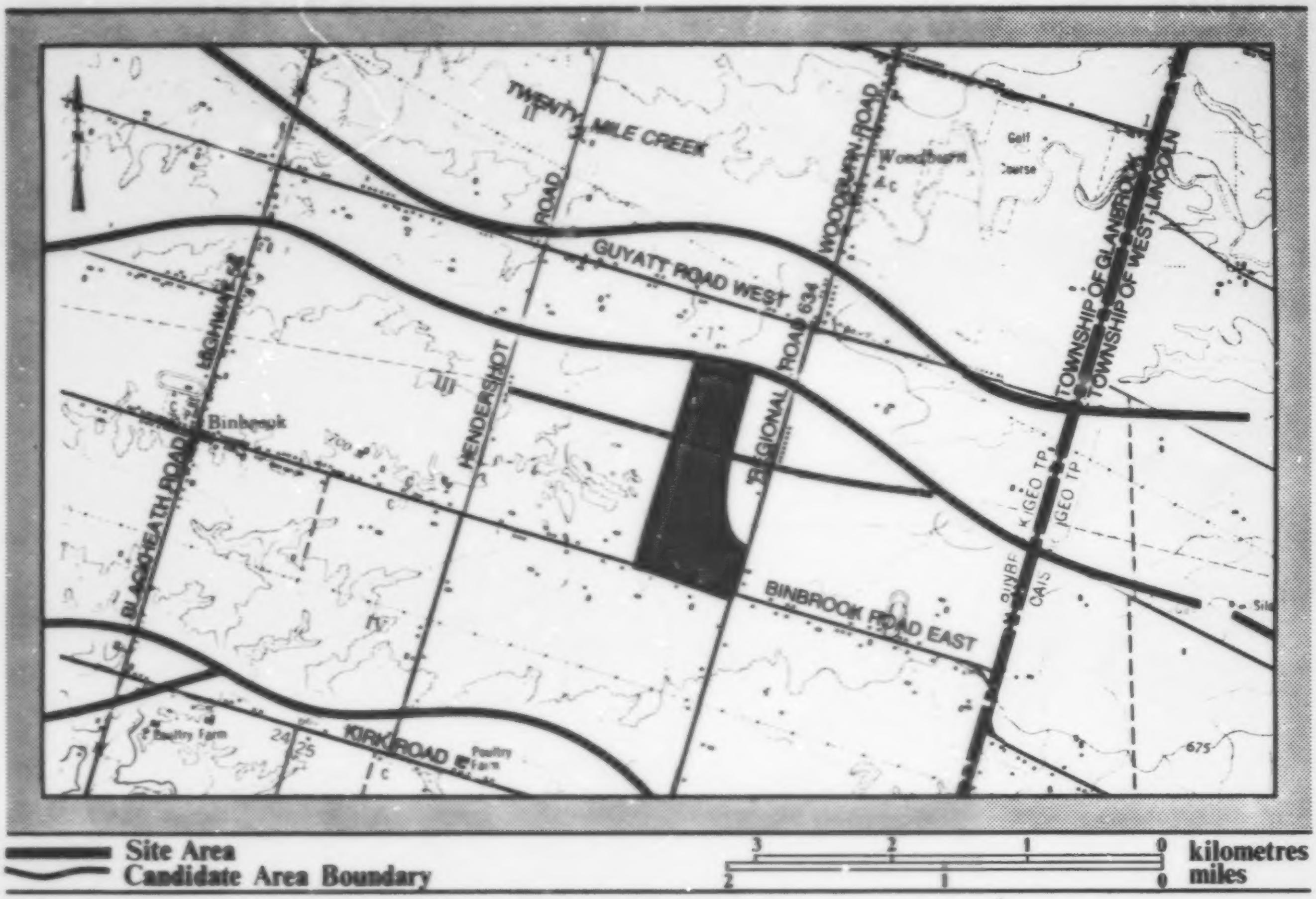
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-5W


TWENTY MILE CREEK
Woodburn
Golf Course
WOODBURN ROAD
GUYATT ROAD WEST
HIGHWAY 56
HENDERSHOT ROAD
REGIONAL ROAD 634
TOWNSHIP OF GLANBROOK
TOWNSHIP OF WEST LINCOLN
GEO TP
CAIS
Binbrook
BLACKHEATH ROAD
BINBROOK ROAD EAST
KIRK ROAD E
Poultry Farm
675
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

Agricultural exclusionary factors Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) and Class 3 row crops or corn-wheat are located within the site area boundaries.

In addition, an Interprovincial Pipelines Ltd. high pressure oil pipeline crosses the north portion of the site area.

Insufficient constraint-free area remains to locate a landfill or integrated facility.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☑
6. social ☐
7. transportation ☑

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

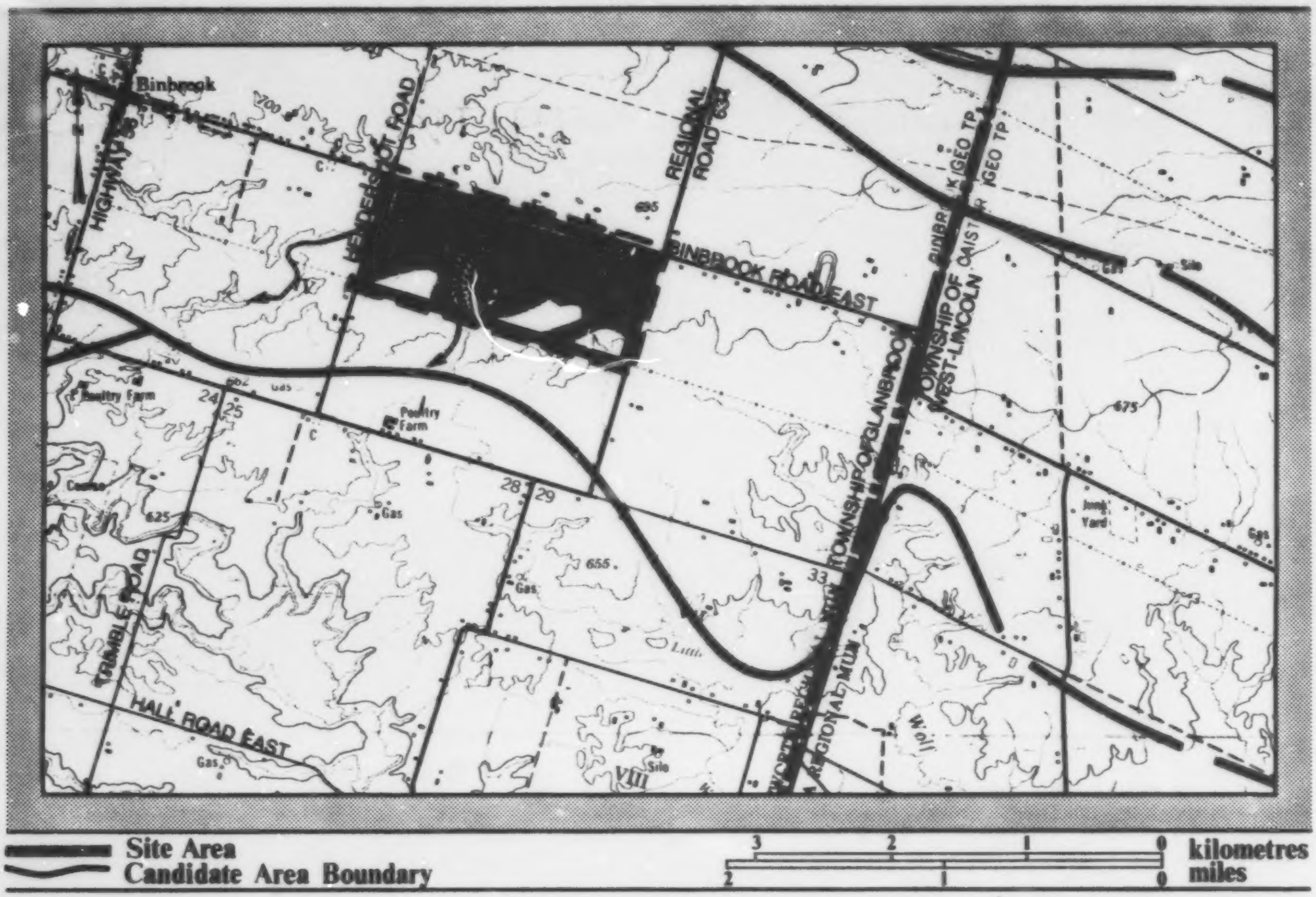
System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Site area boundary expansion is restricted by a candidate boundary to the north; a residential area and Hamilton-Wentworth Regional Road 634 to the east; Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good-quality) and Hamilton-Wentworth Regional Road 622 to the south; and to the west Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality).

LF-6W


Binbrook
HIGHWAY 56
HENDERSON ROAD
REGIONAL ROAD 633
BINBROOK ROAD EAST
TOWNSHIP OF GLANBROOK
TOWNSHIP OF WEST-LINCOLN
BINBROOK GEO TP
CAISTOR GEO TP
REGIONAL MUN
Poultry Farm
Gas
Junk Yard
Silo
TRIMBLE ROAD
HALL ROAD EAST
VIII
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Agricultural exclusionary factors Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) are found within the site area boundaries.

A floodplain is found in the southwestern portion of the site area.

Insufficient constraint-free area remains which would accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the west, northeast and south; Hamilton Region Road 622 to the north; a residential area (Binbrook) to the west and clusters of residential development to the east; and an Ontario Hydro transmission line to the south.

Suitability Screen

1. size ●
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ●
6. social ☐
7. transportation ☐

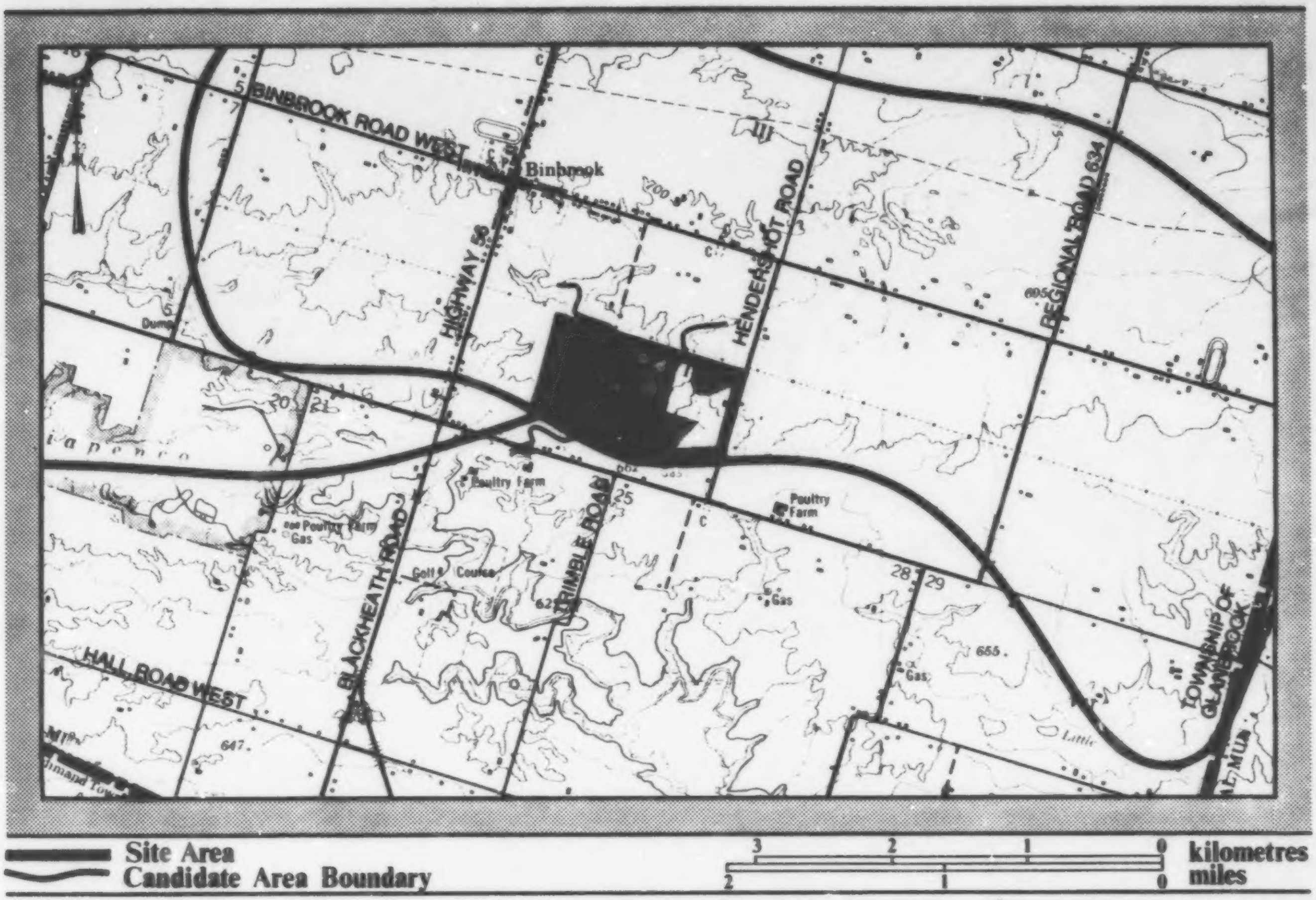
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-7W


BINBROOK ROAD WEST
Binbrook
HIGHWAY 56
HENDERSHOT ROAD
REGIONAL ROAD 634
BLACKHEATH ROAD
TRIMBLE ROAD
HALL ROAD WEST
Poultry Farm
Poultry Farm
Poultry Farm
Gas
Golf Course
Gas
Gas
Dump
TOWNSHIP OF GLANBROOK
695
655
647
621
20
21
25
28
29
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Agricultural exclusionary factors Class 1 or 2 and 3 row crops or corn-wheat are found within the site area boundaries. In addition, a stream course crosses the site area.

The remaining unconstrained area is not sufficiently large for a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by the candidate area boundary to the south; a residential area (Binbrook) to the north west; clusters of residential development to the west and north; Class 1 or 2 and 3 row crops or corn-wheat and an Ontario Hydro transmission line to the north; and Hendershot Road and the site area boundary of LF-9W to the east.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☒
6. social ☐
7. transportation ☐

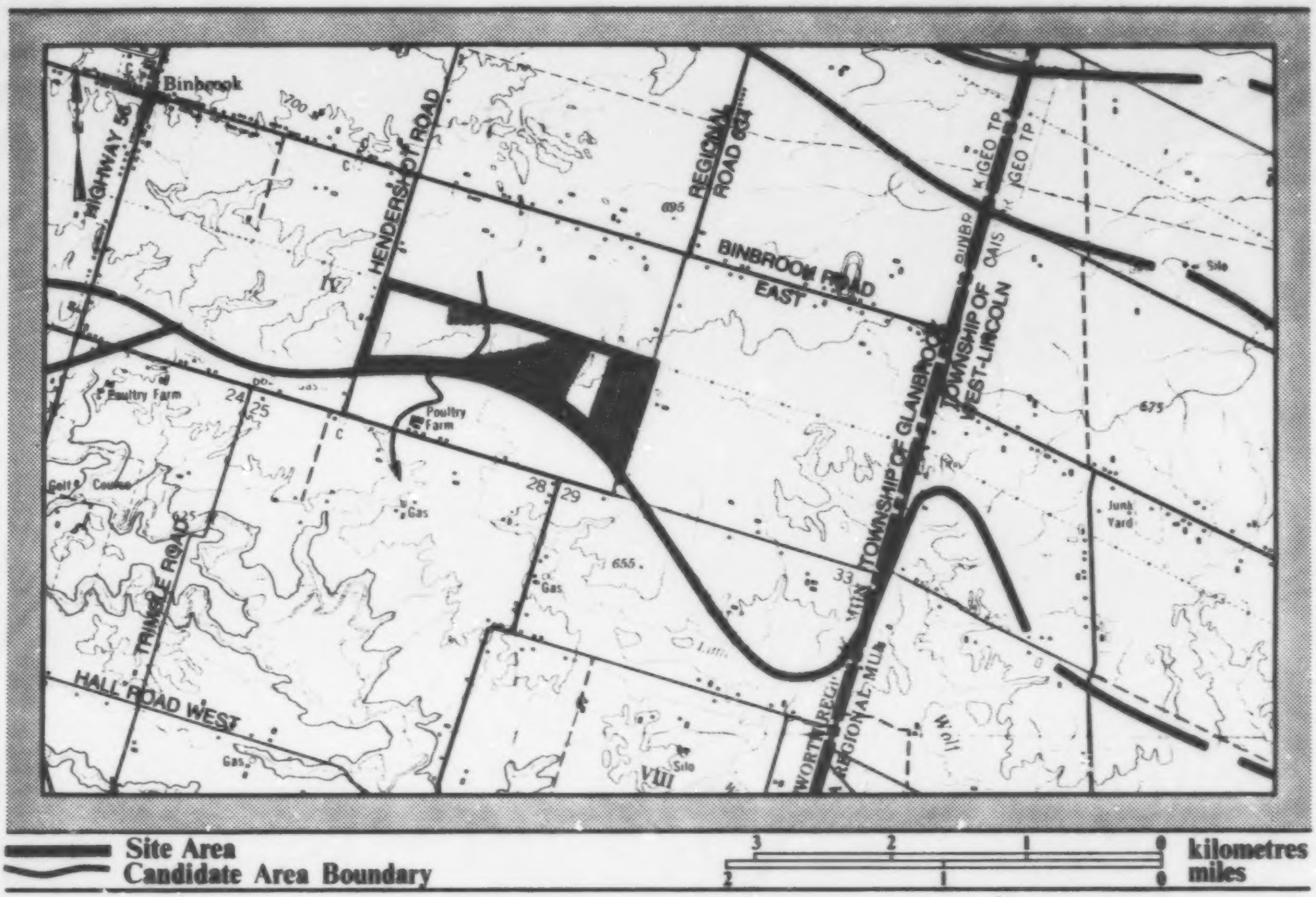
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-8W


Binbrook
HIGHWAY 56
HENDERSHOT ROAD
REGIONAL ROAD 634
BINBROOK ROAD EAST
TOWNSHIP OF GLANBROOK
TOWNSHIP OF WEST-LINCOLN
Poultry Farm
Poultry Farm
Golf Course
Gas
Gas
Gas
TRINITY CHURCH ROAD
HALL ROAD WEST
Junk Yard
Silo
Silo
700
695
675
655
625
24
25
28
29
33
IV
VIII
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Agricultural exclusionary factors Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain, and hay (good quality) are found within the site area boundaries. In addition, a stream course crosses the site area.

The remaining constraint-free area is not large enough for a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain and hay (good quality) and an Ontario Hydro transmission line to the north; the candidate area boundary to the south; Hamilton-Wentworth Region Road 634 and Class 1, 2 and 3 mixed, cereal grain, hay-grain and hay (good quality) to the east; and Hendershot Road & site area boundary of LF-8W to the west.

Suitability Screen

1. size ●
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ●
6. social ☐
7. transportation ☐

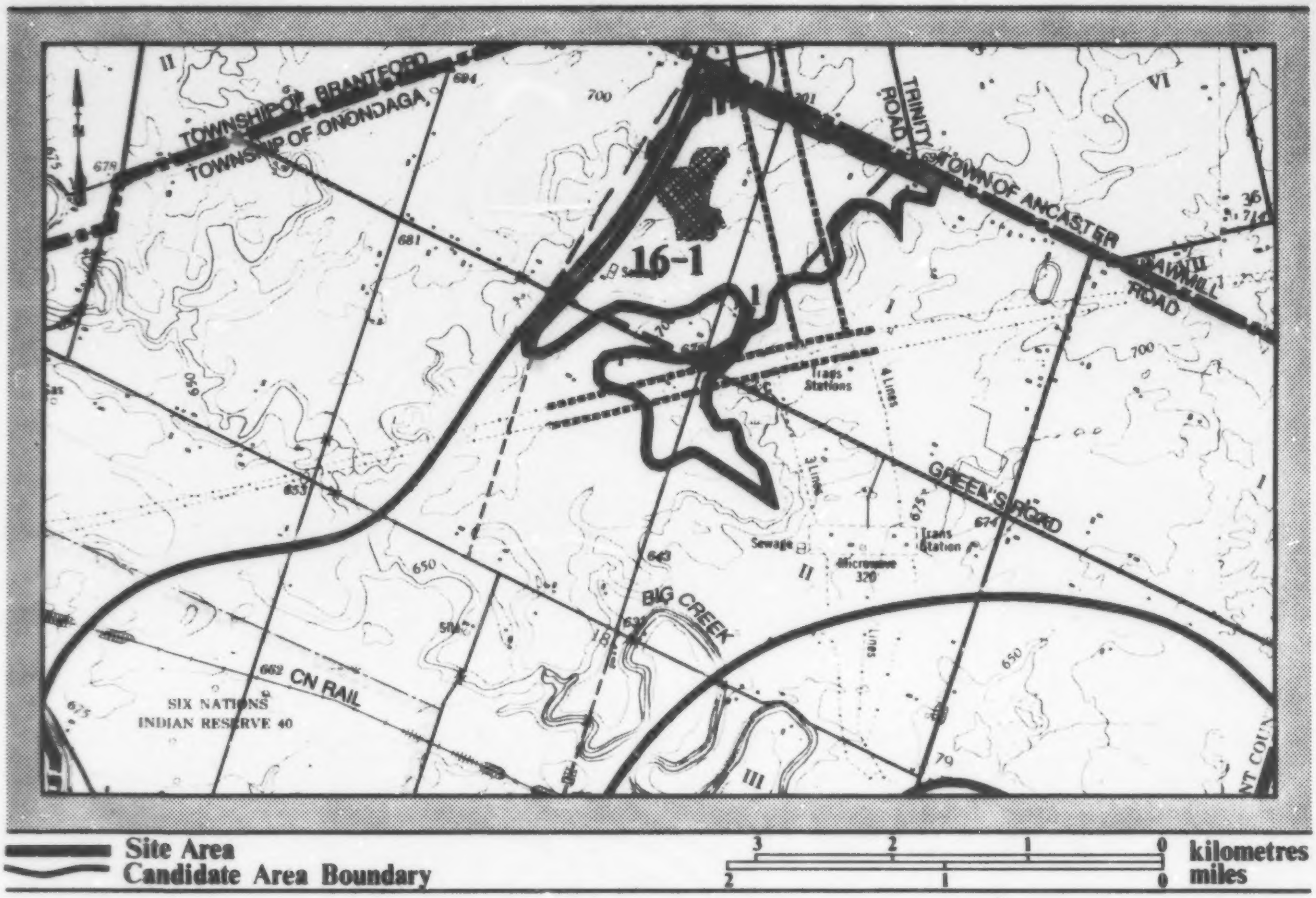
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-9W


TOWNSHIP OF BRANTFORD
TOWNSHIP OF ONONDAGA
TRINITY ROAD
TOWN OF ANCASTER
SAWMILL ROAD
GREEN'S ROAD
BIG CREEK
CN RAIL
SIX NATIONS INDIAN RESERVE 40
16-1
Trans Stations
Trans Station
Sewage
Microwave 320
4 Lines
3 Lines
II
VI
VII
I
III
700
650
681
653
675
643
637
662
674
679
694
701
710
36
79
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Ontario Hydro transmission lines cross the southern and eastern portions of the site area. A stream/course floodplain crosses the northwestern portion of the site area. SEU 16-1 occurs within the site area boundaries. The Second Onondaga Baptist cemetery occurs within the site area boundaries.

Sufficient unconstrained area remains in which to locate a landfill or integrated facility.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☑
7. transportation ☑

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

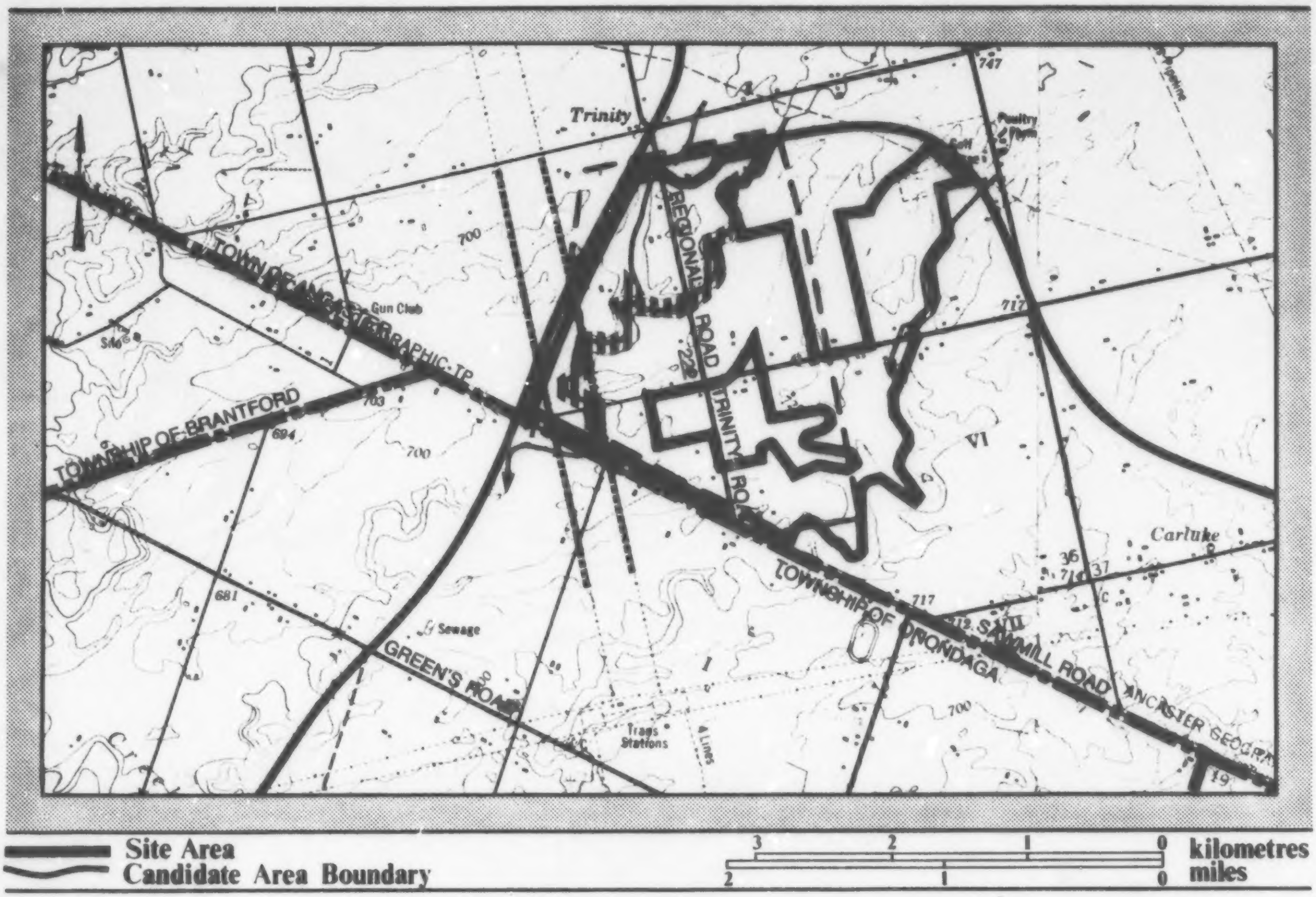
System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Expansion is constrained by a floodplain to the south and east; a candidate area boundary to the west; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the south and east and Class 3 row crops or corn-wheat to the west; and Sawmill Road and site area boundary of LF-11W to the north.

LF-10W


Trinity
747
Poultry Farm
700
TOWN OF ANCASTER GEOGRAPHIC TP
Gun Club
TOWNSHIP OF BRANTFORD
703
694
700
REGIONAL ROAD 222
TRINITY ROAD
717
VI
Carluke
36
71
37
717
TOWNSHIP OF ONONDAGA
SAWMILL ROAD
ANCASTER GEOGRA
681
Sewage
GREEN'S ROAD
Trans Stations
4 Lines
700
19
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area is crossed by Ontario Hydro transmission lines in the western portion of the site area. Hamilton-Wentworth Region Road 222 crosses the site area. A stream course/floodplain occurs in the northwest portion of the site area.

The eastern portion of the site area is irregularly shaped. However, the central portion of the site area contains sufficient area in which to locate a landfill or integrated facility. A small area of specialty crops and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and Class 3 row crops or corn-wheat occurs in the centre of the site area.

Adjacent Constraints:

Expansion is constrained by a candidate area boundary to the west and north; a floodplain to the east; Sawmill Road and the site area boundary of LF-10W to the south; and Class 1 or 2 and 3 row crops or corn-wheat to the north.

Suitability Screen

1. size ☐
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

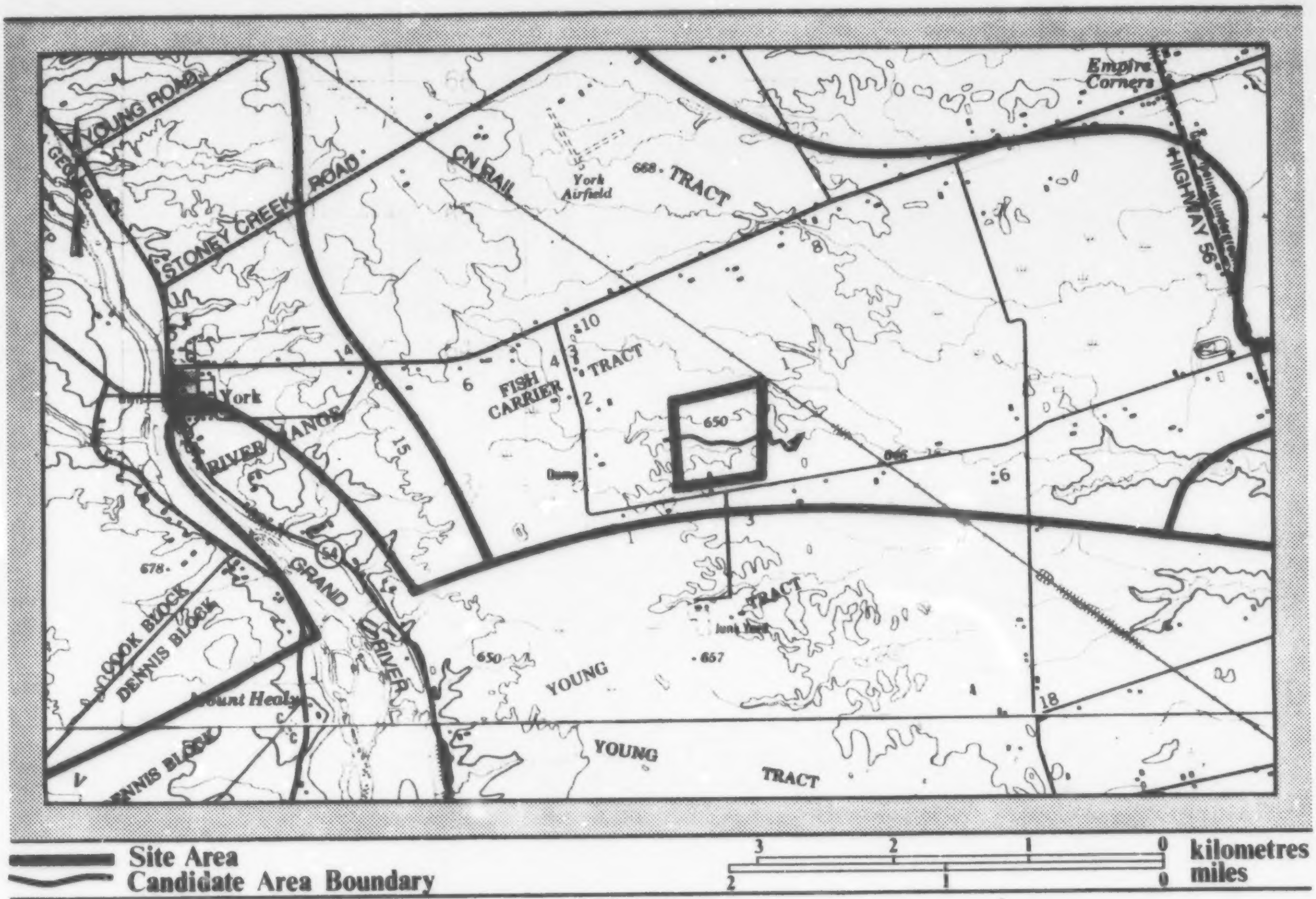
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-11W


YOUNG ROAD
STONEY CREEK ROAD
CN RAIL
York Airfield
668
TRACT
Empire Corners
HIGHWAY 56
FISH CARRIER
TRACT
York
RIVER RANGE
GRAND RIVER
54
678
COOK BLOCK
DENNIS BLOCK
Mount Healy
650
657
Dump
Junk Yard
YOUNG
YOUNG
TRACT
Site Area
Candidate Area Boundary
kilometres
miles

Site Constraints:

A stream course crosses the site area.

There is insufficient constraint-free area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is precluded by Class 1 or 2 row crops or corn-wheat to the north, east, south and west.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

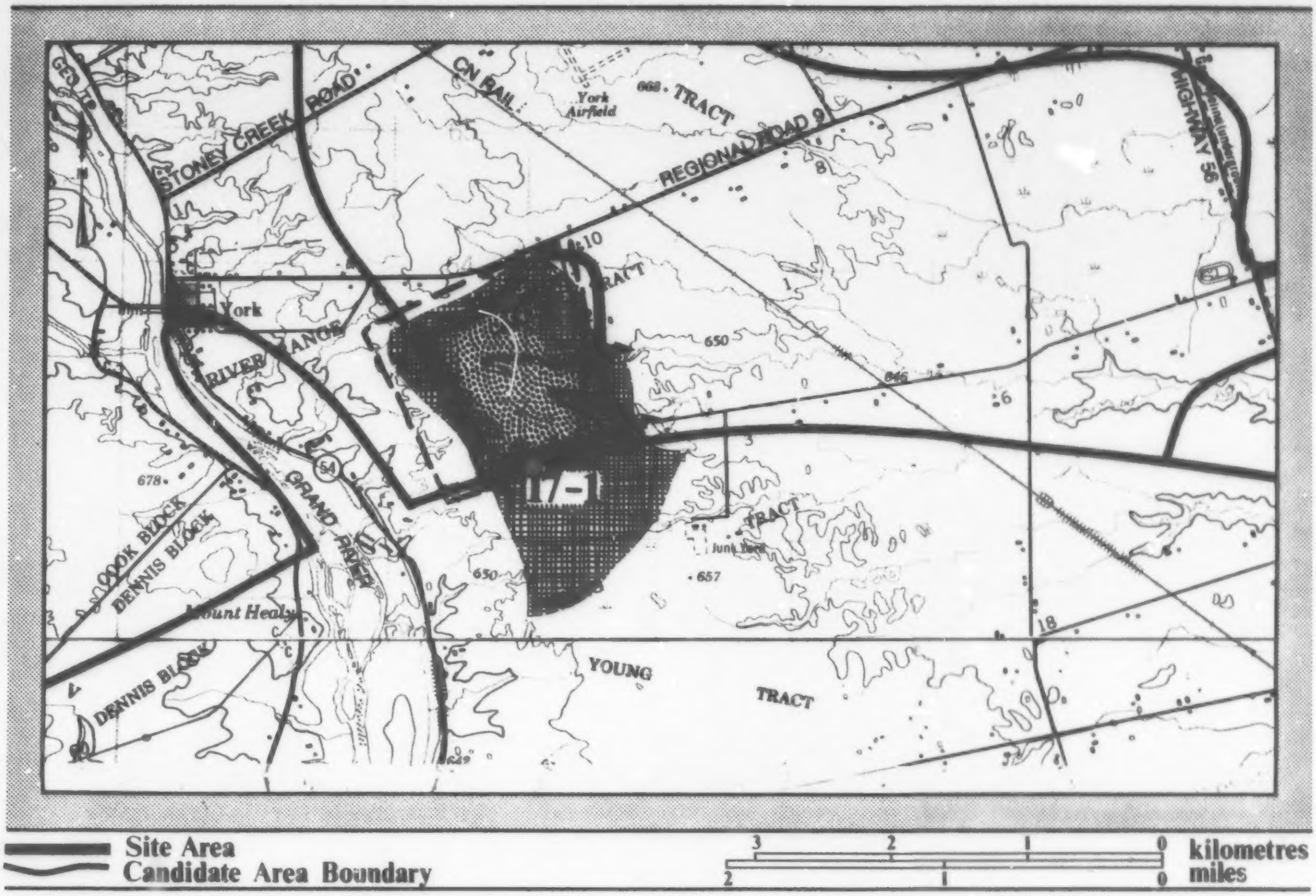
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-12W



STONEY CREEK ROAD
CN RAIL
York Airfield
668
TRACT
REGIONAL ROAD 9
HIGHWAY 56
York
RIVER RANGE
10
TRACT
650
646
6
17-1
54
GRAND RIVER
678
COOK BLOCK
DENNIS BLOCK
Mount Healy
TRACT
Junk Yard
657
650
18
DENNIS BLOCK
YOUNG
TRACT
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is constrained by a wetland area, SEU 17-1 and two stream courses occurring within the site area boundaries.

There is insufficient constraint-free area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Site area boundary expansion is constrained by candidate area boundaries to the west and south, and by Class 1 or 2 row crops or corn-wheat to the east and north and Class 1 or 2 mixed cereal grain, hay-grain and hay (good quality) to the east and north.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

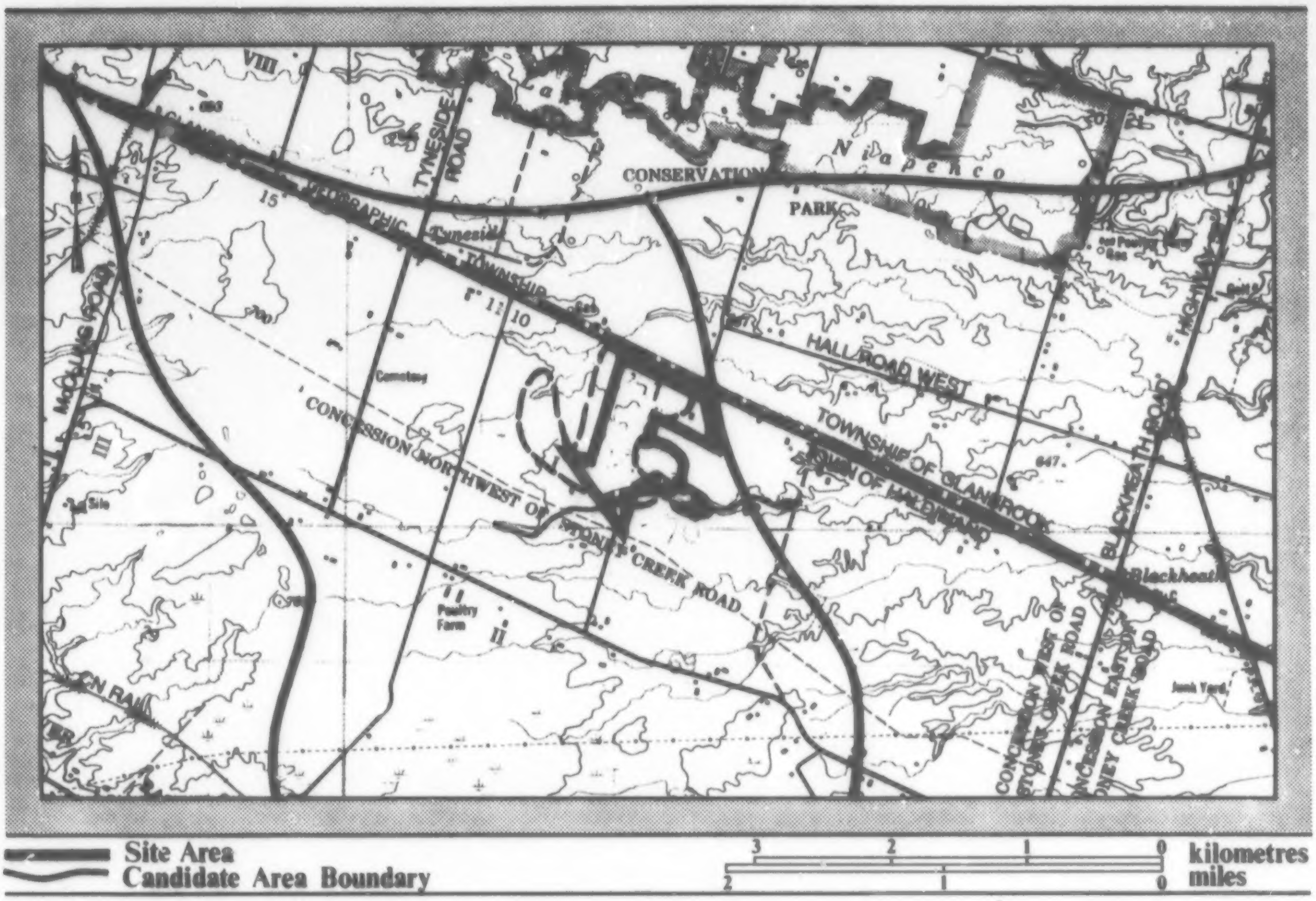
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-13W



CONSERVATION
PARK
Niapenco
TYNESIDE ROAD
GEOGRAPHIC TOWNSHIP
Tyneside
HALL ROAD WEST
TOWNSHIP OF GLANBROOK
TOWN OF HALDIMAND
CONCESSION NORTHWEST OF STONEY CREEK ROAD
CONCESSION WEST OF STONEY CREEK ROAD
CONCESSION EAST OF STONEY CREEK ROAD
BLACKHEATH ROAD
Blackheath
HIGHWAY
MCKLING ROAD
CN RAIL
VIII
III
II
Cemetery
Poultry Farm
Junk Yard
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A stream course/floodplain is found in the extreme south of the site area.

The remaining site area is irregularly shaped and there is insufficient constraint-free area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained to the east by Class 3 row crops or corn-wheat and to the north by Class 1 or 2 row crops or corn-wheat. The site area is bordered by a drumlin field to the south and west. There are also stream courses to the north and south and a Union Gas high pressure gas pipeline to the south.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

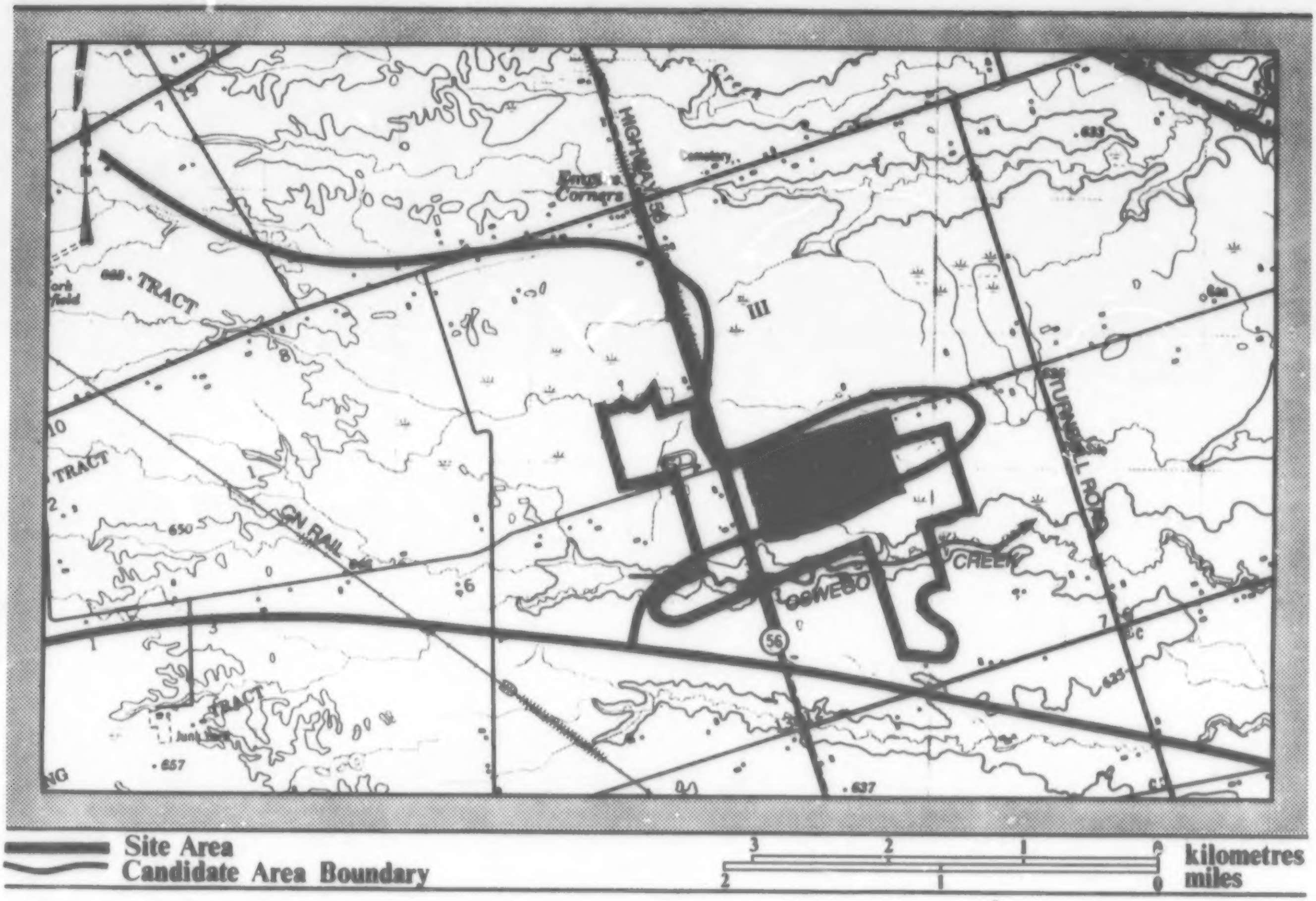
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-14W


HIGHWAY 56
Cemetery
Corners
III
TRACT
TRACT
TRACT
CN RAIL
OSWEGO
CREEK
TURNBULL ROAD
56
650
657
637
635
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Agricultural exclusionary factors Class 1 or 2 row crops or corn-wheat and mixed, cereal grain and hay-grain (good quality) are found within the site area boundaries. In addition Provincial Highway 56, a Union Gas high pressure gas pipeline and a stream course cross the site area.

There is insufficient unconstrained area in which to locate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to placing the operating area in the constraint free portion of the site area. However, in all cases, a large part of the technical buffer area would extend outside the constraint-free area. It was therefore decided to drop this site from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is precluded to the north by a stream course and Class 1 or 2 row crops or corn-wheat, mixed, cereal grain, hay-grain or hay (good quality) and pasture, grazing or hay (poor quality); to the west by Class 1 or 2 and 3 or 4 mixed cereal grain, hay-grain or hay (good quality); to the east by Class 3 or 4 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality); and to the south by Class 3 or 4 mixed

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☒
6. social ☐
7. transportation ☒

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

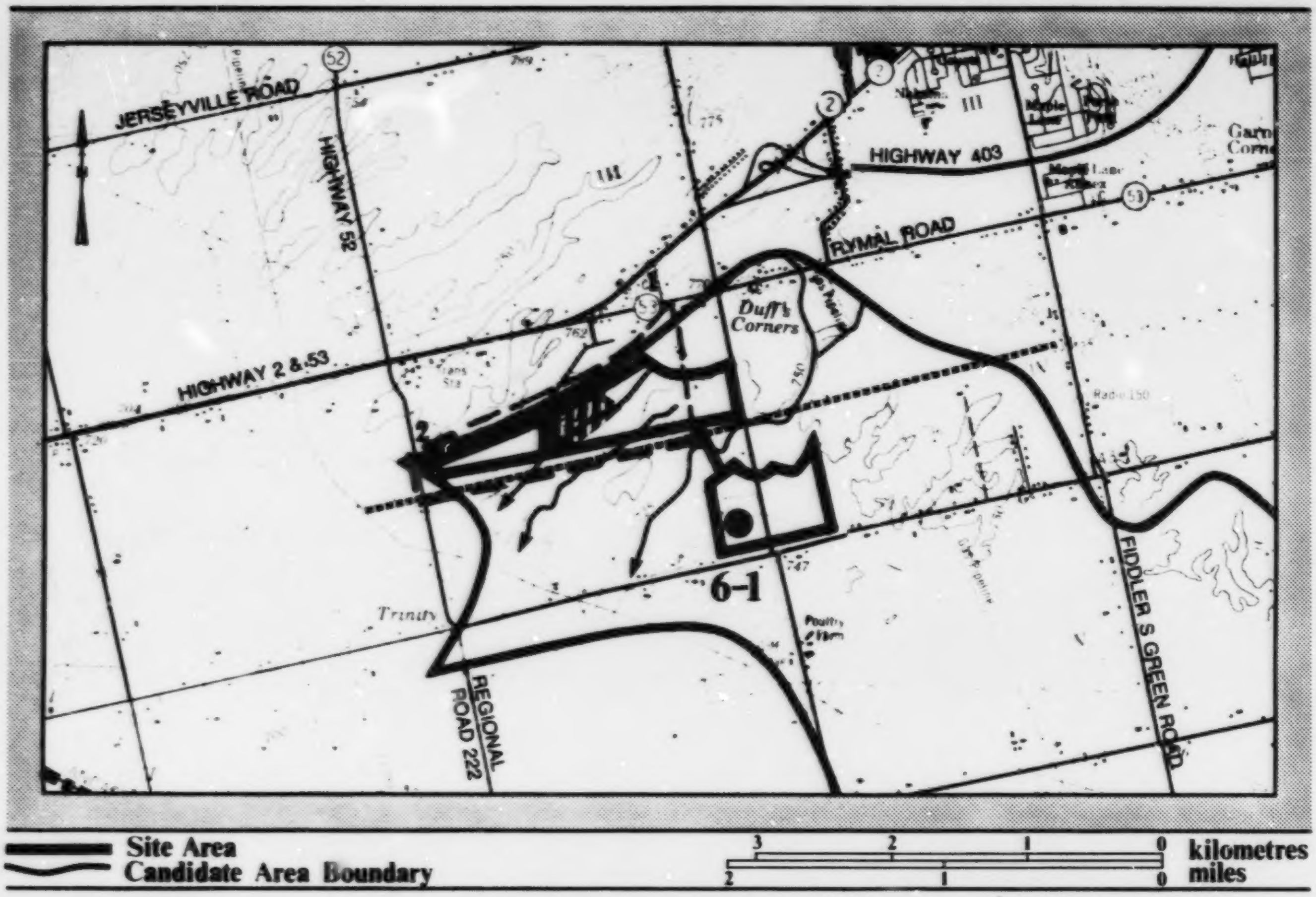
10. travel distance ☐
11. access routes ☐

PI-1W

Adjacent Constraints:

Continued

cereal grain, hay-grain and hay (good quality) and row crops or corn-wheat and Class 1 or 2 row crops or corn-wheat and pasture, grazing or hay (poor quality).


JERSEYVILLE ROAD
HIGHWAY 52
HIGHWAY 403
RYMAL ROAD
HIGHWAY 2 & 53
Duff's Corners
6-1
Trinity
REGIONAL ROAD 222
FIDDLER S GREEN ROAD
52
2
53
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The south portion of the site area conflicts with SEU 6-1. A floodplain divides the site area.

Ancaster is located approximately 400m to the north of the site area study area.

The following community and/or recreation features were identified adjacent to the site area:

1. Shaver Family Cemetery;
2. Ancaster Double Rink.

The north portion of the site area is designated industrial. The operating area of the facility can be located in the unconstrained area of the north portion of the site area. The technical buffer extends northward into a small portion of the buffer area surrounding commercial designated and vacant lands and southward across a small portion of Class 3 or 4 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality). Due to a preference for industrial locations, it was decided to retain the site area for further consideration.

Adjacent Constraints:

Expansion of the site area is constrained by Class 3 or 4 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the south; the candidate area boundary and commercial designated and vacant land and an existing residential area at Duff's Corners to the north; Class 3 or 4 row crops or corn-wheat to the east; and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the west.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☐

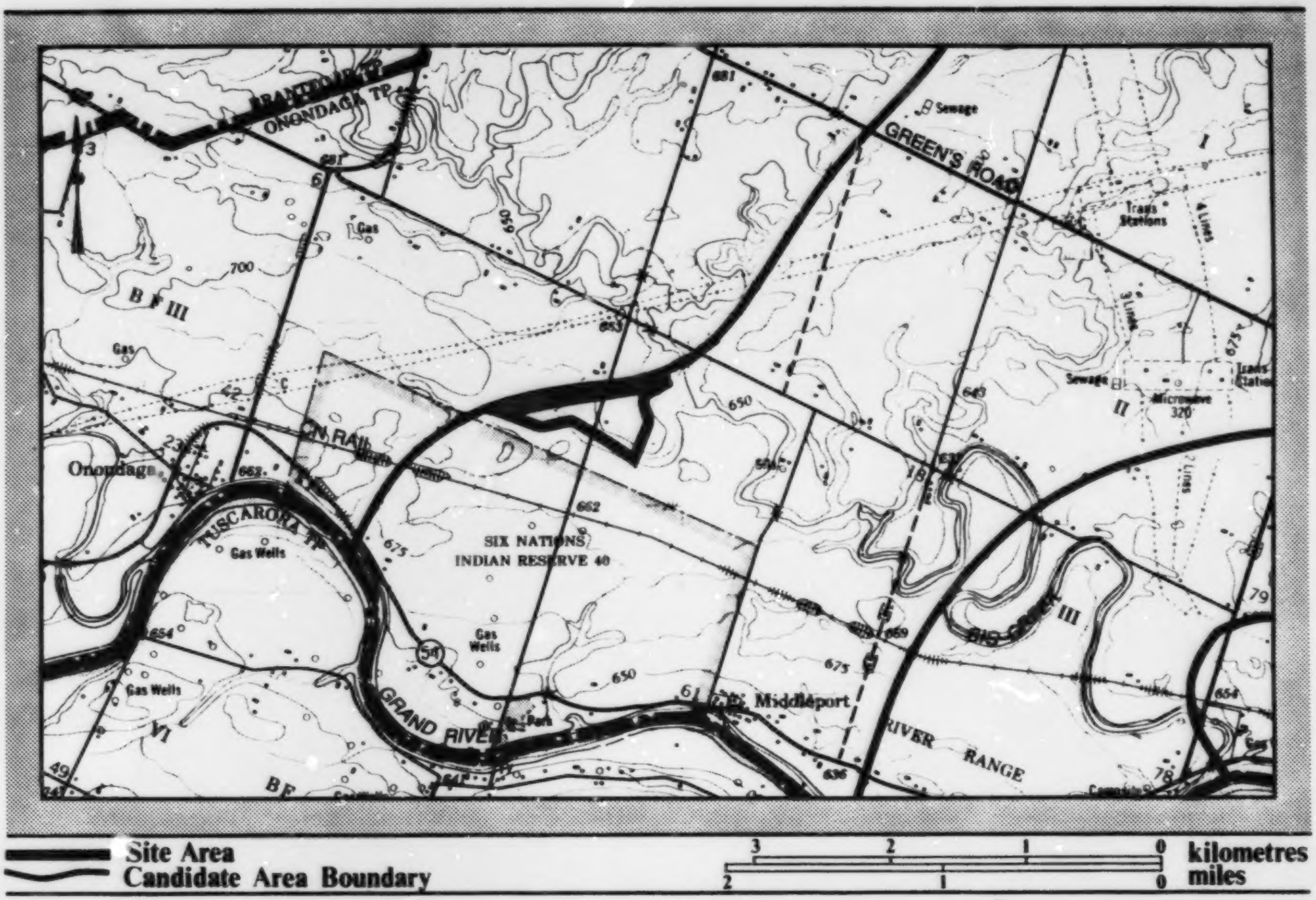
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-2W


BRANTFORD TP
ONONDAGA TP
GREEN'S ROAD
Sewage
Trans Stations
4 Lines
Gas
700
B F III
650
681
653
Gas
3 Lines
675
Trans Station
Sewage
Microwave 320
II
649
650
CN RAIL
Onondaga
23
662
TUSCARORA TP
Gas Wells
675
SIX NATIONS INDIAN RESERVE 40
2 Lines
BIG CREEK III
79
659
675
Gas Wells
54
654
Gas Wells
650
61
Middleport
GRAND RIVER
RIVER RANGE
VI
BF
49
78
654
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

There is insufficient constraint-free area in which to locate the combined physical/chemical treatment plant and incinerator facility.

Consideration was given to placing the operating area of the facility in the unconstrained area. However, a large majority of the technical buffer would extend outside the constraint-free area. It was therefore decided to drop this site from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by the candidate area boundary to the north and west; Class 1 or 2 row crops or corn-wheat to the south and west; and a floodplain to the east.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

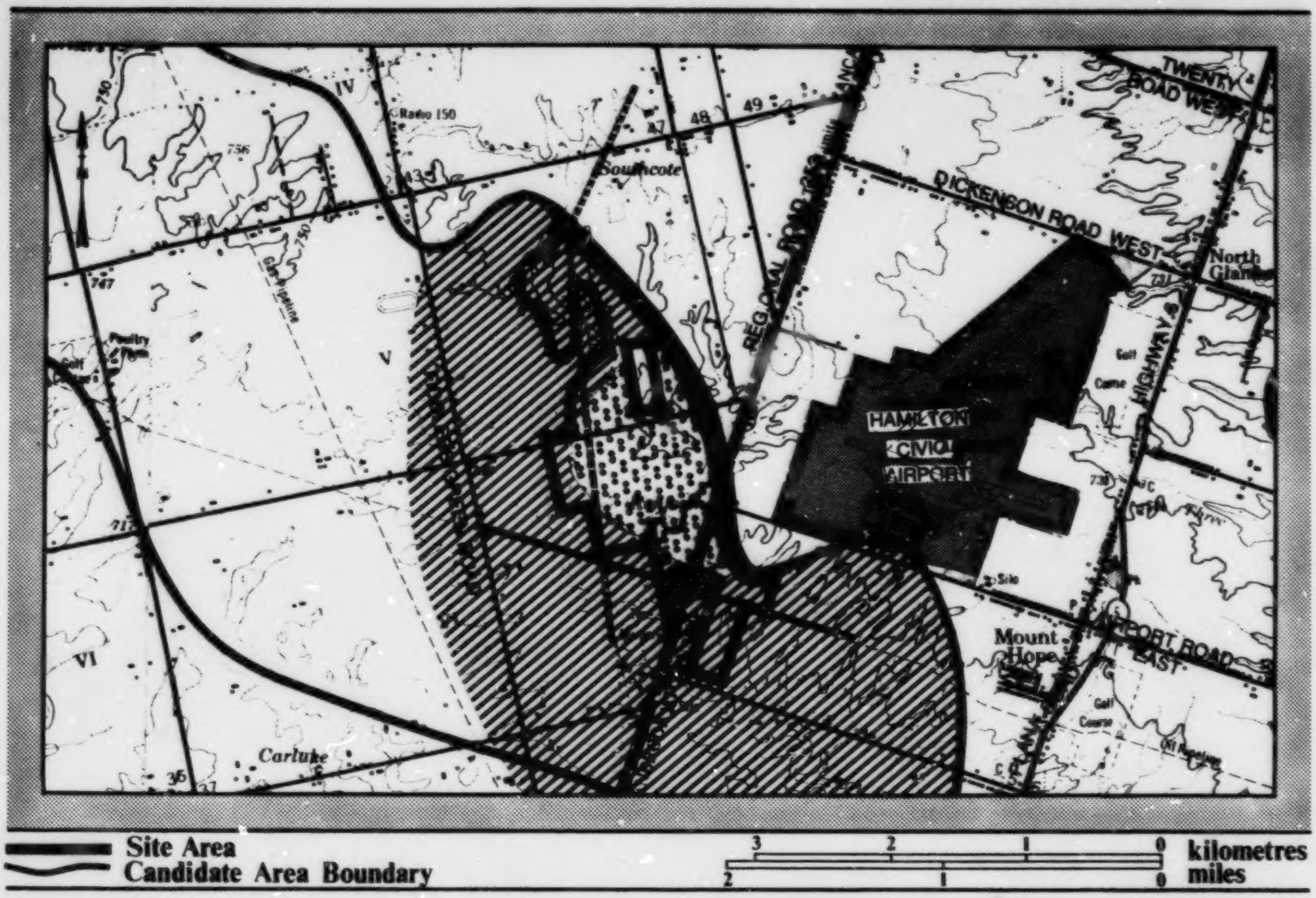
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-3W


TWENTY ROAD WEST
DICKENSON ROAD WEST
REGIONAL ROAD
HAMILTON CIVIC AIRPORT
Southcote
North Glanford
Mount Hope
AIRPORT ROAD EAST
HIGHWAY 6
Carluke
IV
V
VI
Radio 150
Poultry Farm
Golf Course
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is constrained by a residential area (Renforth) within the site area boundaries, a stream course and Interprovincial Pipelines Limited oil pipeline in the south portion, and an Ontario Hydro transmission line in the western portion. Hamilton-Wentworth Regional Road 253 crosses the south portion of the site area.

In addition, the site area is in close proximity to Hamilton Civic Airport. The site area is located within the airport's obstacle control protection area. This would likely impose a height restriction on the incinerator stack. It was therefore decided to drop this site area from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries would not ameliorate the conflict between the incinerator facility and airport operations at Hamilton Civic Airport.

Suitability Screen

1. size ●
2. physical resources ●
3. biology ☐
4. land use ●
5. agriculture ☐
6. social ☐
7. transportation ●

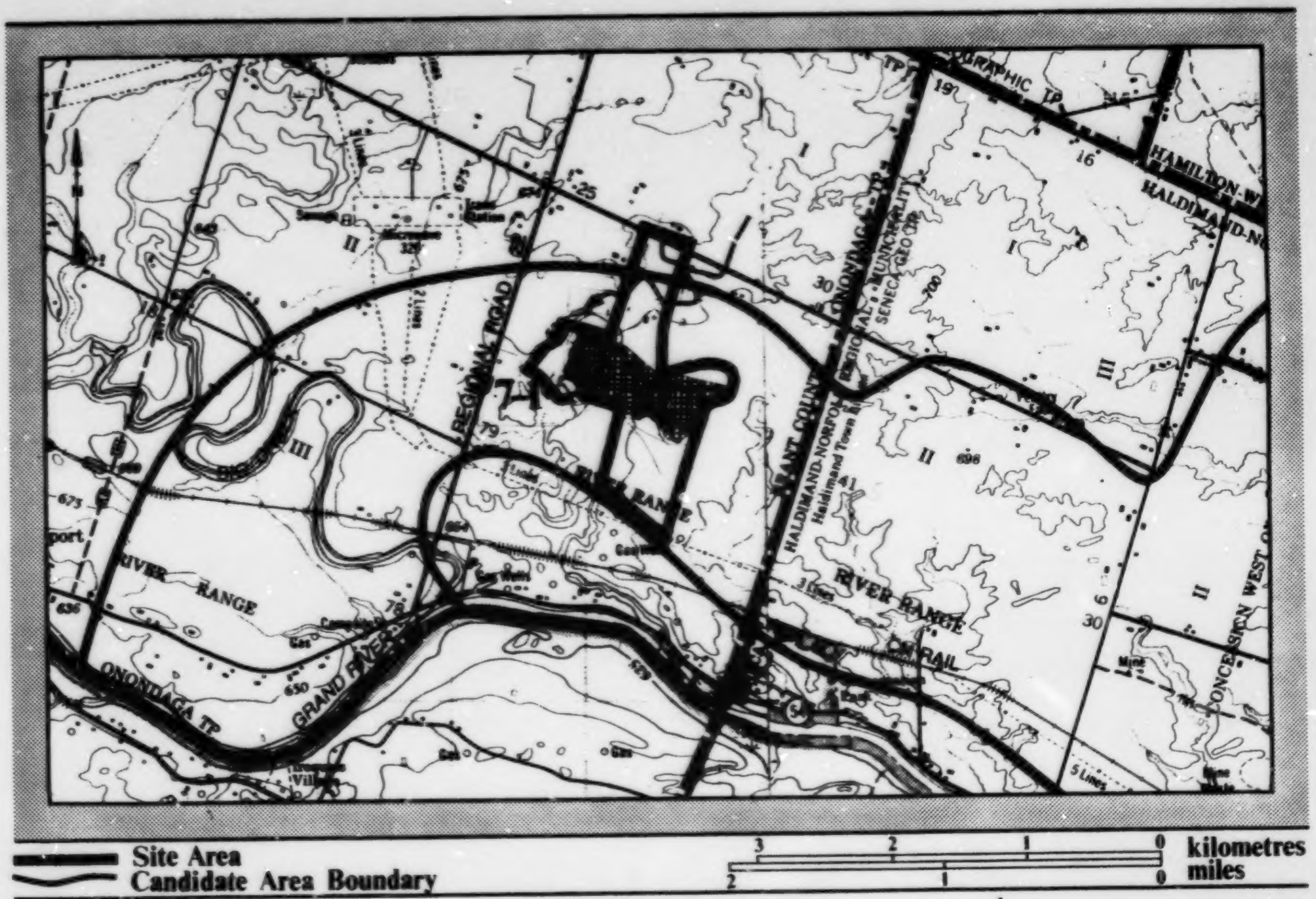
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-4W


HAMILTON-W
HALDIMAND-N
REGIONAL ROAD
RIVER RANGE
RIVER RANGE
RIVER RANGE
GRAND RIVER
ONONDAGA TP
CN RAIL
CONCESSION WEST
HALDIMAND-NORFOLK
BRANT COUNTY
I
II
III
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 7-1 is found in the centre of the site area. In addition a stream course is found in the north portion of the site area.

There is insufficient unconstrained area in which to locate the combined physical/chemical treatment plant and incinerator facility.

Consideration was given to placing the operating area of a facility in the constraint-free portion of the site. However, in all cases the technical buffer would extend either outside the boundaries of the site area or into the SEU. It was therefore decided to drop this site area from further consideration.

Adjacent Constraints:

Expansion of site area boundaries to provide sufficient space for facility siting is precluded by the candidate area boundary and Ontario Hydro transmission lines to the south; to the east and north by Class 1 or 2 row crops or corn-wheat; to the north by Class 3 or 4 mixed, cereal-grain, hay-grain and hay (good quality); and a wetland area to the west.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

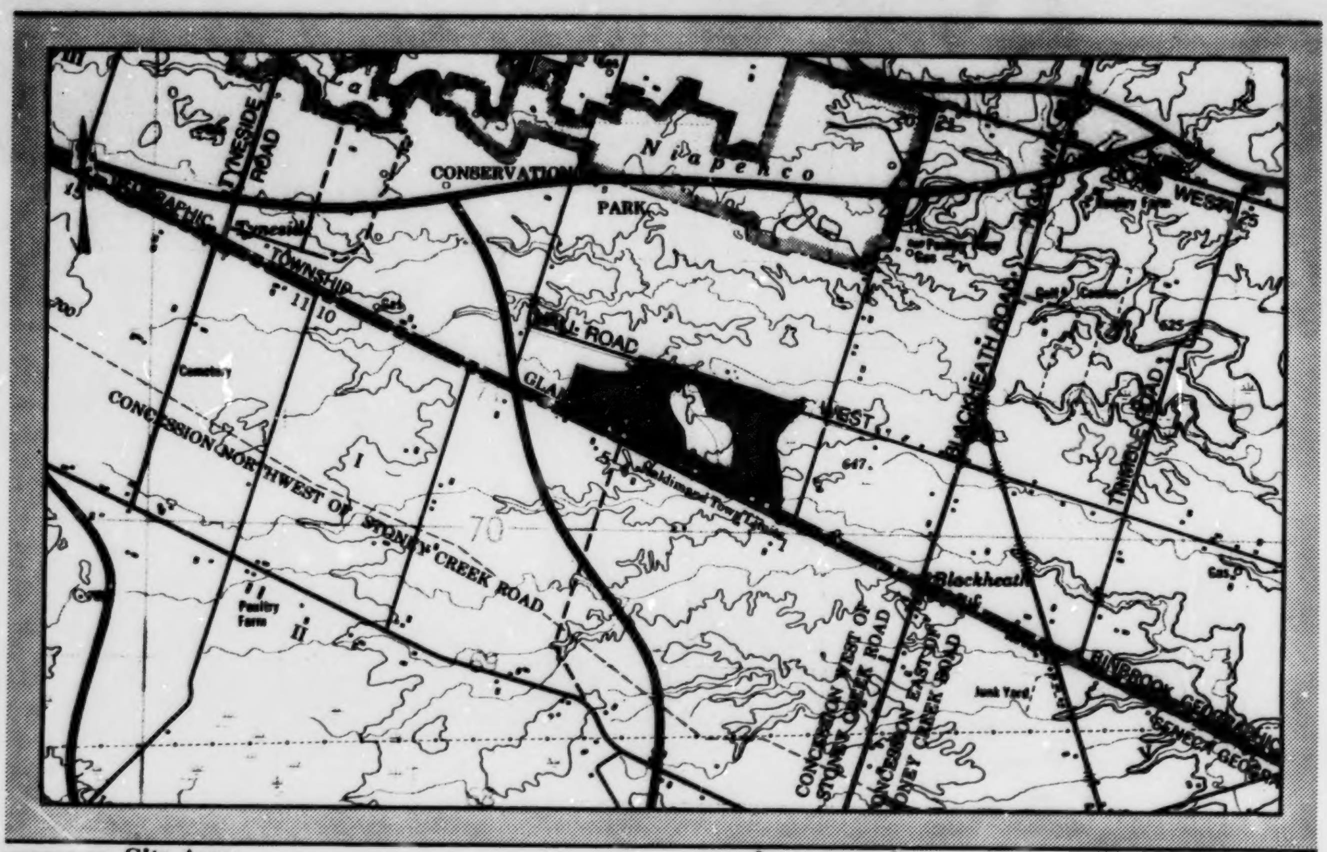
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI–5W


CONSERVATION
PARK
Niapenco
TYNESIDE ROAD
Tyneside
TOWNSHIP
11
10
HALL ROAD
GLANCASTER
WEST
Cemetery
CONCESSION NORTHWEST OF STONEY CREEK ROAD
70
I
II
Poultry Farm
Haldimand Tract Line
647
BLACKHEATH ROAD
Blackheath
CONCESSION WEST OF STONEY CREEK ROAD
CONCESSION EAST OF STONEY CREEK ROAD
Junk Yard
BINBROOK GEOGRAPHIC
SENECA GEOGRAPHIC
TRINITY ROAD
ROAD WEST
Golf Course
625

Site Area
Candidate Area Boundary

3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

Agricultural exclusionary factor Class 3 row crops or corn-wheat is found within the site area boundary.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to placing the operating area of the facility within the constraint-free portion of the site area. However, a large majority of the technical buffer would extend outside the constraint-free area. It was therefore decided to drop this site area from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries to provide sufficient area for facility siting is restricted by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and Class 1 or 2 row crops or corn-wheat to the south; by Class 1 or 2 row crops or corn-wheat to the east and west and by Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain and hay (good quality) to the north.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☒
6. social ☐
7. transportation ☐

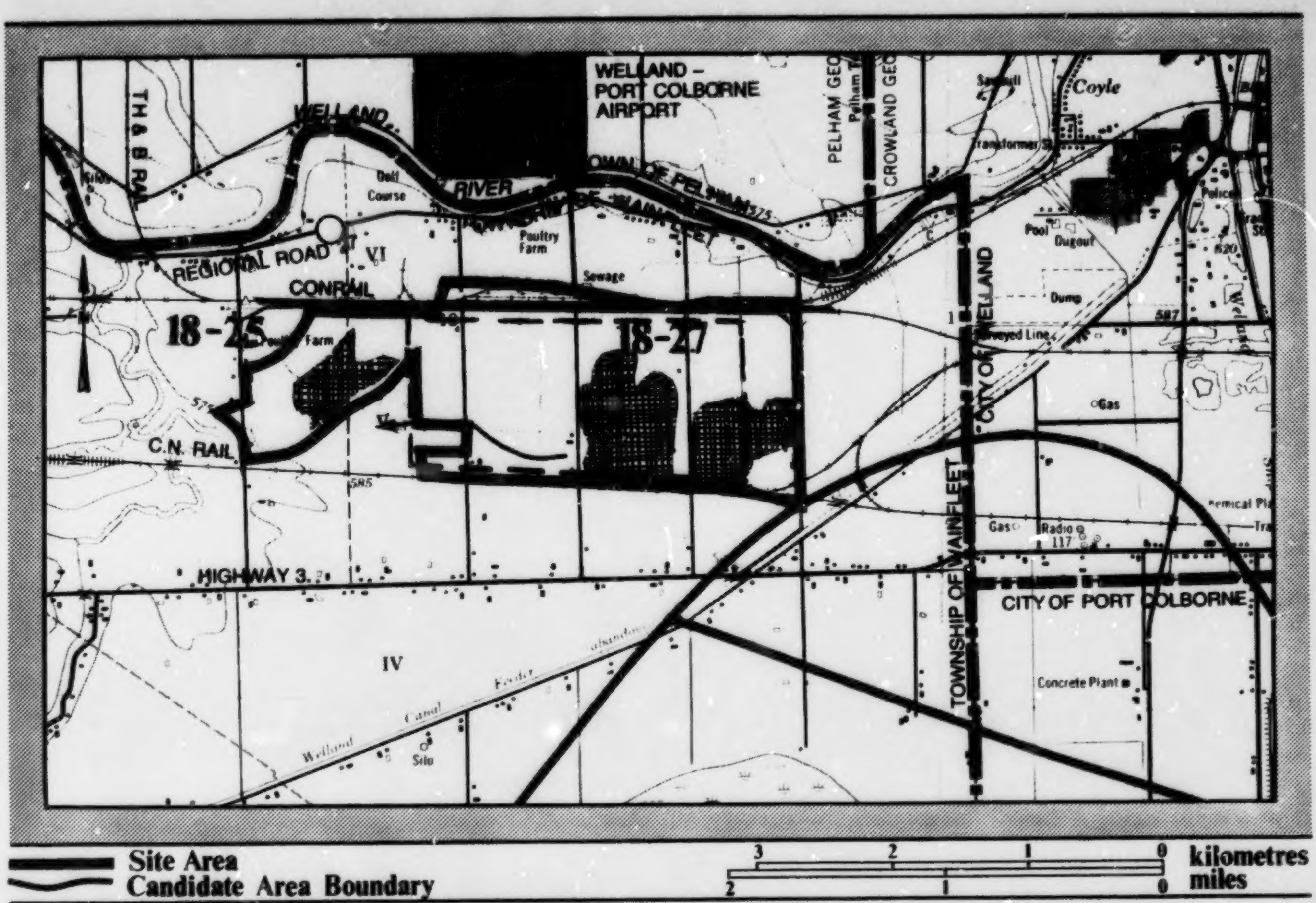
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-6W


WELLAND – PORT COLBORNE AIRPORT
WELLAND RIVER
TH & B RAIL
Golf Course
TOWN OF PELHAM
TOWNSHIP OF WAINFLEET
Poultry Farm
Sewage
REGIONAL ROAD 47
VI
CONRAIL
18-25
18-27
Farm
C.N. RAIL
575
585
PELHAM GEO
CROWLAND GEO
Sawmill
Coyle
Transformer St
Pool
Dugout
Dump
587
CITY OF WELLAND
Surveyed Line
Gas
Chemical Pl
Gas
Radio
117
HIGHWAY 3
TOWNSHIP OF WAINFLEET
CITY OF PORT COLBORNE
IV
Welland Canal Feeder
Silo
Concrete Plant
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is constrained by SEU 18-27, which occurs in the eastern portion of the site area, and SEU 18-25 which occurs on the western portion of the site area. A ConRail rail line crosses the north portion of the site area. A small stream crosses the south portion of the site.

Welland Airport is approximately 1 km north of the site area. The incinerator stack associated with an integrated facility would potentially conflict with airport operations. Therefore, an integrated facility at this location was deemed to be unsuitable. However, sufficient area remained for the development of a landfill or landfill and physical/chemical treatment plant combination.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a Canadian National Railways rail line and Class 3 mixed, cereal grain, hay-grain or hay (good quality) to the south; a floodplain, a residential area and Class 1 or 2 row crops corn-wheat to the west; a residential area and Class 1 or 2 row crops or corn-wheat to the north; and the site area boundary of LF-4C to the east. There is substantial residential development to the north of the ConRail line and south of the CNR line.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

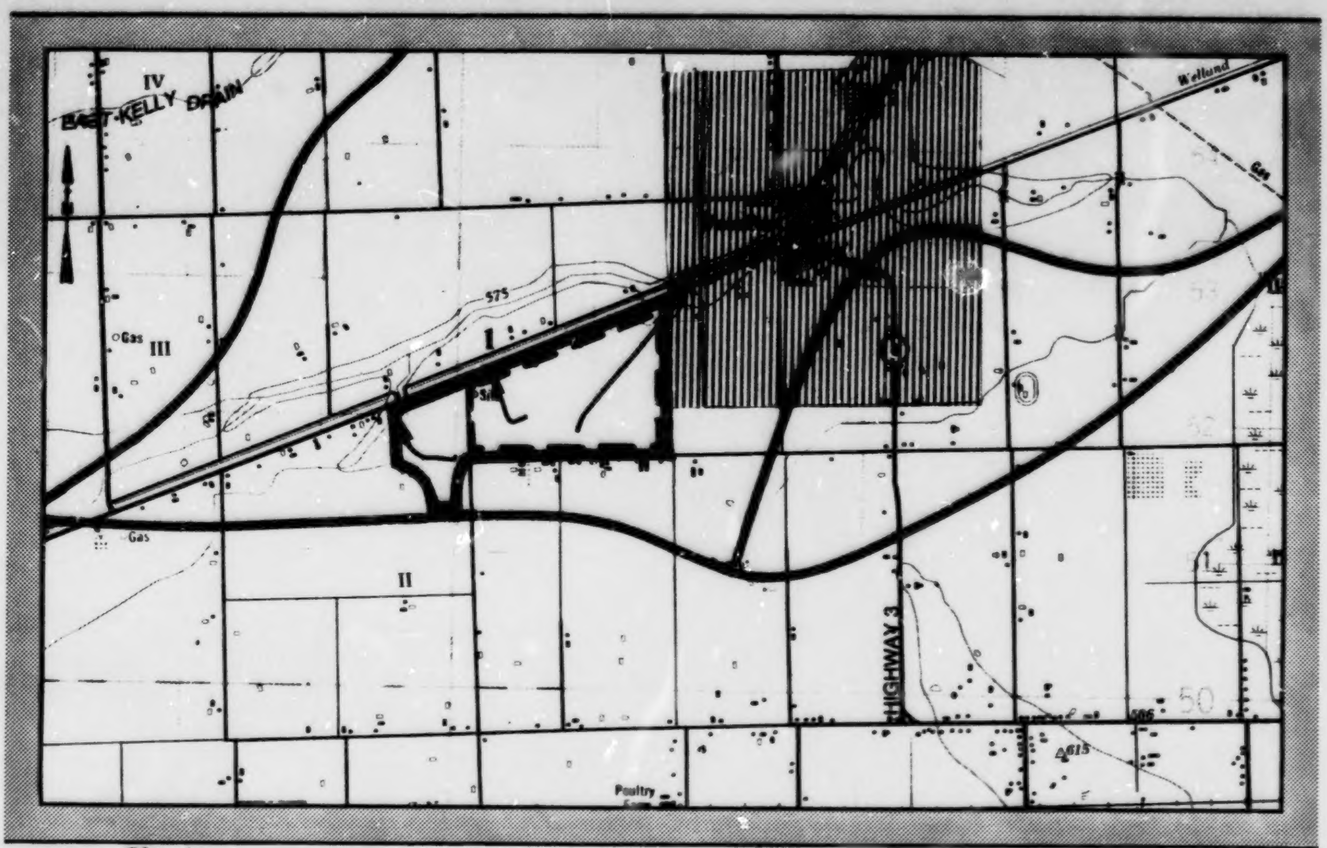
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-1C



Site Area
Candidate Area Boundary

3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

Small streams occur within the site area boundaries. The Welland Feeder Canal is adjacent to the north.

There is sufficient area within the site area boundaries to develop a landfill or integrated facility.

The site area was dropped from further consideration due to its close proximity to the village of Wainfleet, the presence of a designated village residential area adjacent to the site area and its very indirect access. An adequate range of site areas remained, which had comparable hydrogeology but did not have comparable disadvantages.

Adjacent Constraints:

Expansion to adjacent areas is constrained to the north by an abandoned Welland Feeder Canal and Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality); to the east and south by Class 3 row crops or corn-wheat; and to the west by Class 1 or 2 row crops or corn-wheat.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☒
5. agriculture ☐
6. social ☒
7. transportation ☒

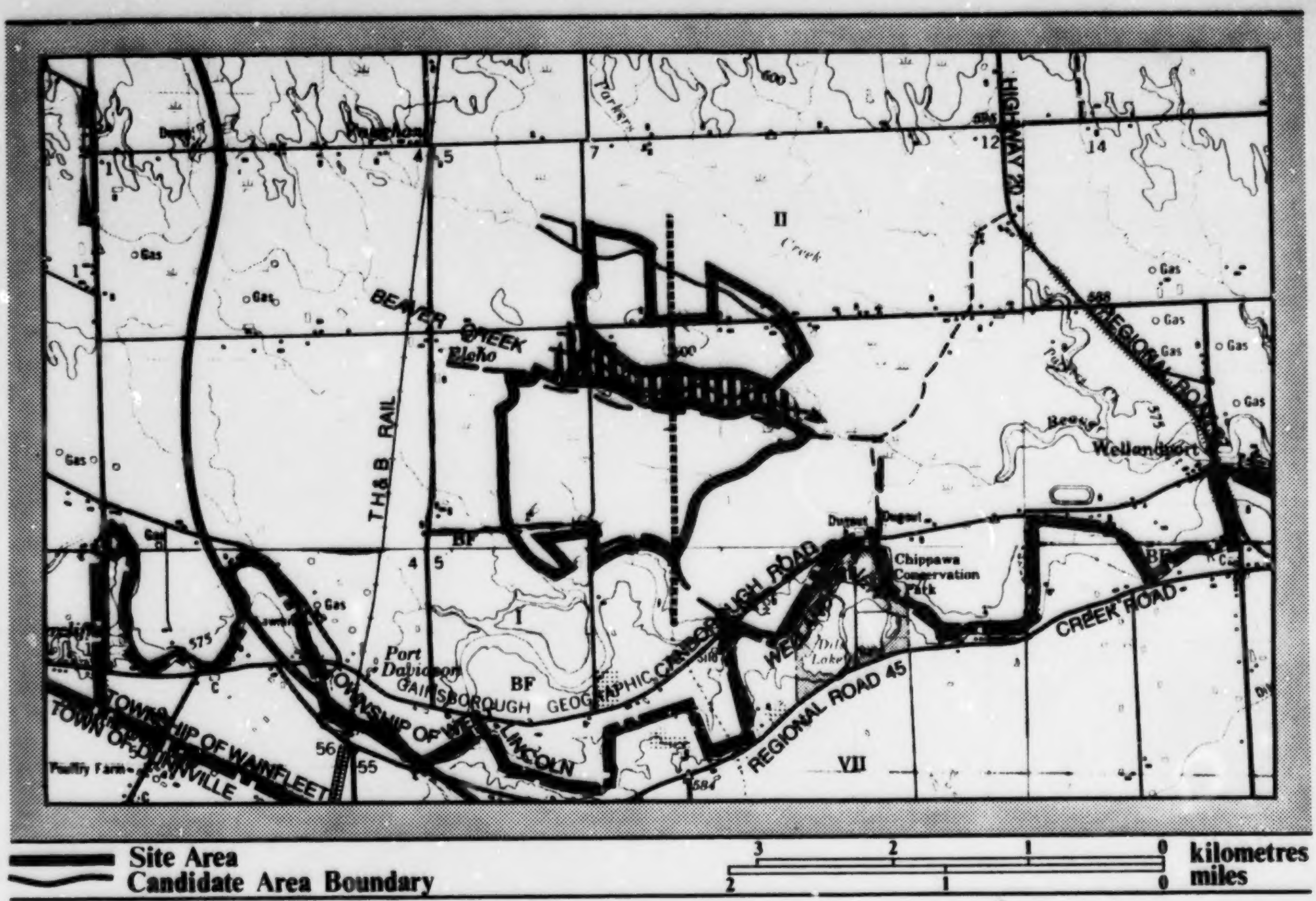
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-2C


HIGHWAY 20
BEAVER CREEK
TH&B RAIL
Port Davidson
GAINSBOROUGH GEOGRAPHIC
TOWNSHIP OF WAINFLEET
TOWN OF DUNNVILLE
TOWNSHIP OF WEST LINCOLN
REGIONAL ROAD 45
REGIONAL ROAD
CREEK ROAD
Chippawa Conservation Park
Wellandport
Dunnville
Gas
BF
I
II
VII
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

A floodplain divides the site area in two. An Ontario Hydro transmission line crosses the site area. A stream course/floodplain crosses the north portion of the site area.

The north portion of the site area is irregularly shaped and is not large enough to support a landfill or integrated facility. The south portion of the site area is large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area is constrained by floodplain and Class 1 or 2 row crops or corn-wheat to the south; Class 1 or 2 mixed, cereal grain, hay-grain and hay (good quality) to the north, east, west and south; and Class 3 or 4 row crops or corn-wheat to the north.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

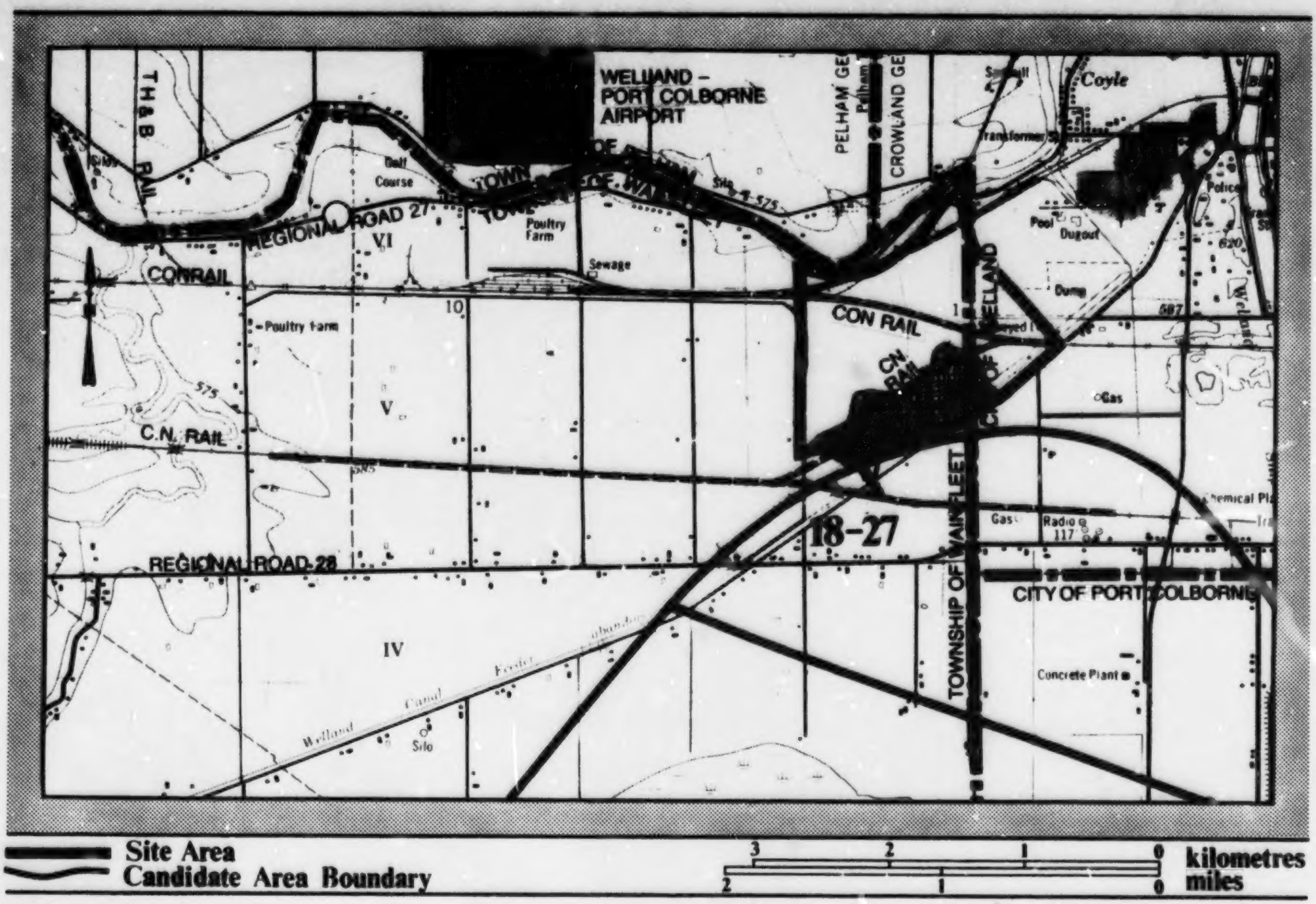
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-3C


WELLAND - PORT COLBORNE AIRPORT
TH&B RAIL
Golf Course
TOWN OF PELHAM
TOWNSHIP OF WAINFLEET
REGIONAL ROAD 27
VI
Poultry Farm
Sewage
CONRAIL
CON RAIL
10
Poultry Farm
V
575
C.N. RAIL
CN RAIL
PELHAM GE
CROWLAND GE
CITY OF WELLAND
Sawmill
Coyle
Transformer Sta
Pool
Dugout
Dump
Police
Gas
587
620
18-27
Gas
Radio 117
Chemical Pl
REGIONAL ROAD 28
CITY OF PORT COLBORNE
TOWNSHIP OF WAINFLEET
IV
Welland Canal Feeder (abandoned)
Silo
Concrete Plant
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

Development of the site area is constrained by ConRail and Canadian National rail lines on the north and south portion of the site area. SEU 18-27 occurs in the southern portions of the site area.

The remaining constraint-free area is irregularly shaped and is not large enough to accommodate a landfill or integrated facility. In addition, proximity to Welland-Port Colborne Airport would likely result in conflicts between the incinerator stack of an integrated facility and airport operations. An incinerator at this site would likely be unsuitable.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a floodplain to the north; a residential area and the site area boundary of LF-8E to the east; a residential area and the candidate area boundary to the south; and Class 1 or 2 row crops or corn-wheat and the site area boundary of LF-1C to the west.

Suitability Screen

1. size ●
2. physical resources ☐
3. biology ●
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

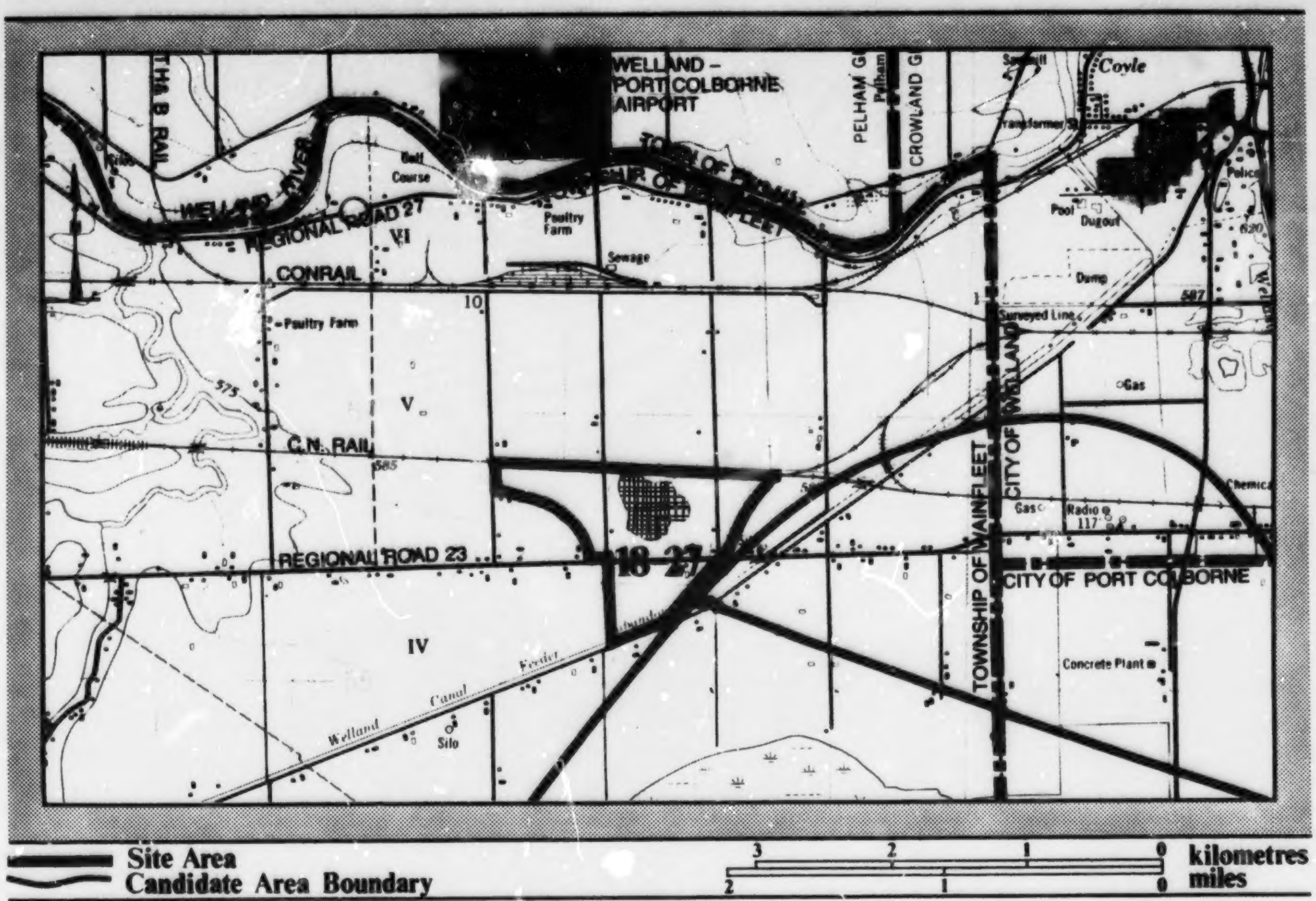
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-4C


WELLAND - PORT COLBORNE AIRPORT
PELHAM
CROWLAND
Coyle
Transformer
Police
Pool
Dugout
Dump
Surveyed Line
587
Gas
Chemica
Radio 117
Golf Course
WELLAND RIVER
REGIONAL ROAD 27
TOWN OF PELHAM
TOWNSHIP OF WAINFLEET
VI
Poultry Farm
Sewage
CONRAIL
10
Poultry Farm
V
575
C.N. RAIL
585
REGIONAL ROAD 23
18-27
TOWNSHIP OF WAINFLEET
CITY OF WELLAND
CITY OF PORT COLBORNE
Concrete Plant
IV
Welland Canal Feeder
Silo
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-27. Niagara Region Road 23 crosses the site area.

There is insufficient constraint-free area remaining in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a Canadian National Railways rail line to the north; the candidate area boundary and residential area to the east; Class 1 or 2 row crops or corn-wheat to the south; and a residential area, Class 1 or 2 mixed, cereal grain, hay-grain and hay (good quality) and a stream course to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

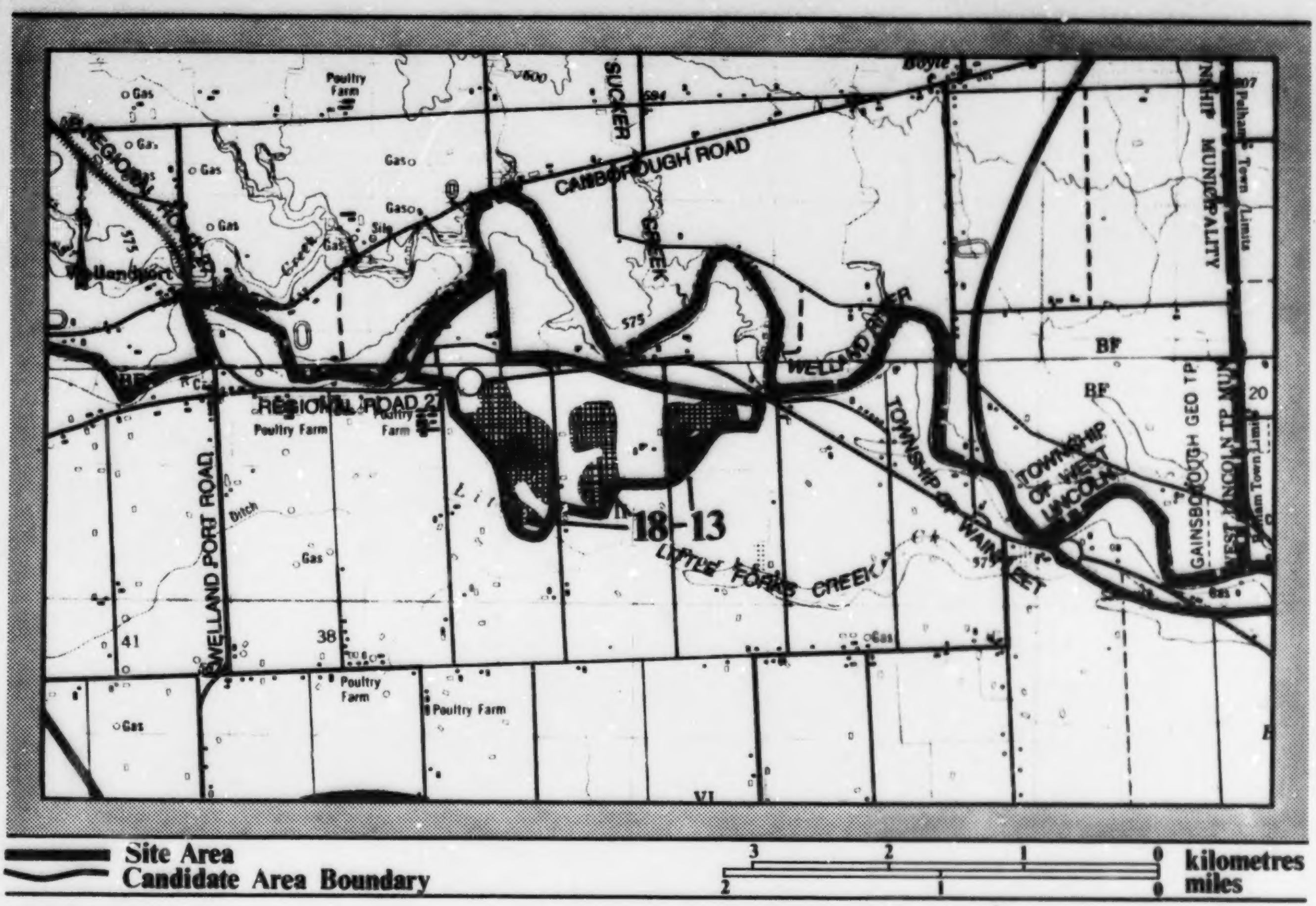
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-5C


CANBOROUGH ROAD
SUCKER CREEK
WELLAND RIVER
REGIONAL ROAD 27
WELLAND PORT ROAD
LITTLE FORKS CREEK
TOWNSHIP OF WAINFLEET
TOWNSHIP OF WEST LINCOLN
GAINSBOROUGH GEO TP
WEST LINCOLN TP MUN
PELHAM TOWN LIMITS
Wellandport
Boyle
Poultry Farm
Gas
Ditch
BF
575
600
18-13
41
38
20
3 2 1 0 kilometres
2 1 0 miles

Site Area
Candidate Area Boundary

Site Constraints:

Development of the site area is constrained by SEU 18-13. Niagara Region Road 27 crosses the northwest portion of the site area.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Suitability Screen

1. size ●
2. physical resources ☐
3. biology ●
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

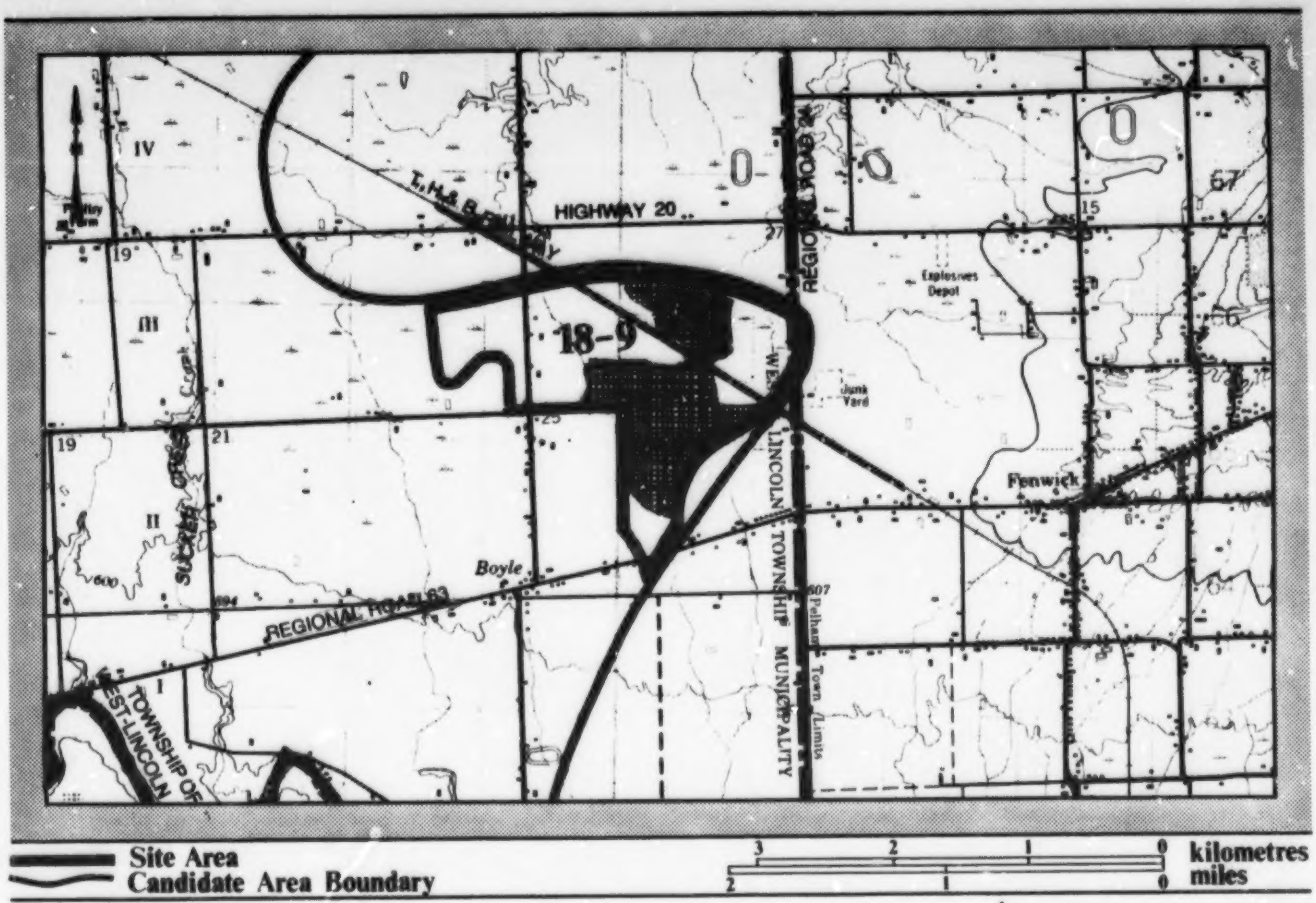
System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a residential area and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east; Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality), a wetland area and floodplain to the south; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the west; and a floodplain, a residential area and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north.

LF-6C


IV
III
II
I
19
21
25
27
15
67
HIGHWAY 20
T.H.& B. RLWY
18-9
REGIONAL ROAD 24
REGIONAL ROAD 63
Explosives Depot
Junk Yard
Fenwick
Boyle
SUCKER CREEK
WEST LINCOLN TOWNSHIP MUNICIPALITY
TOWNSHIP OF WEST-LINCOLN
Pelham Town Limits
600
607
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-9. A Toronto, Hamilton and Buffalo Railways rail line crosses the site area. Niagara Region Roads 24 and 63 occur in the extreme east and south portion of the site area.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

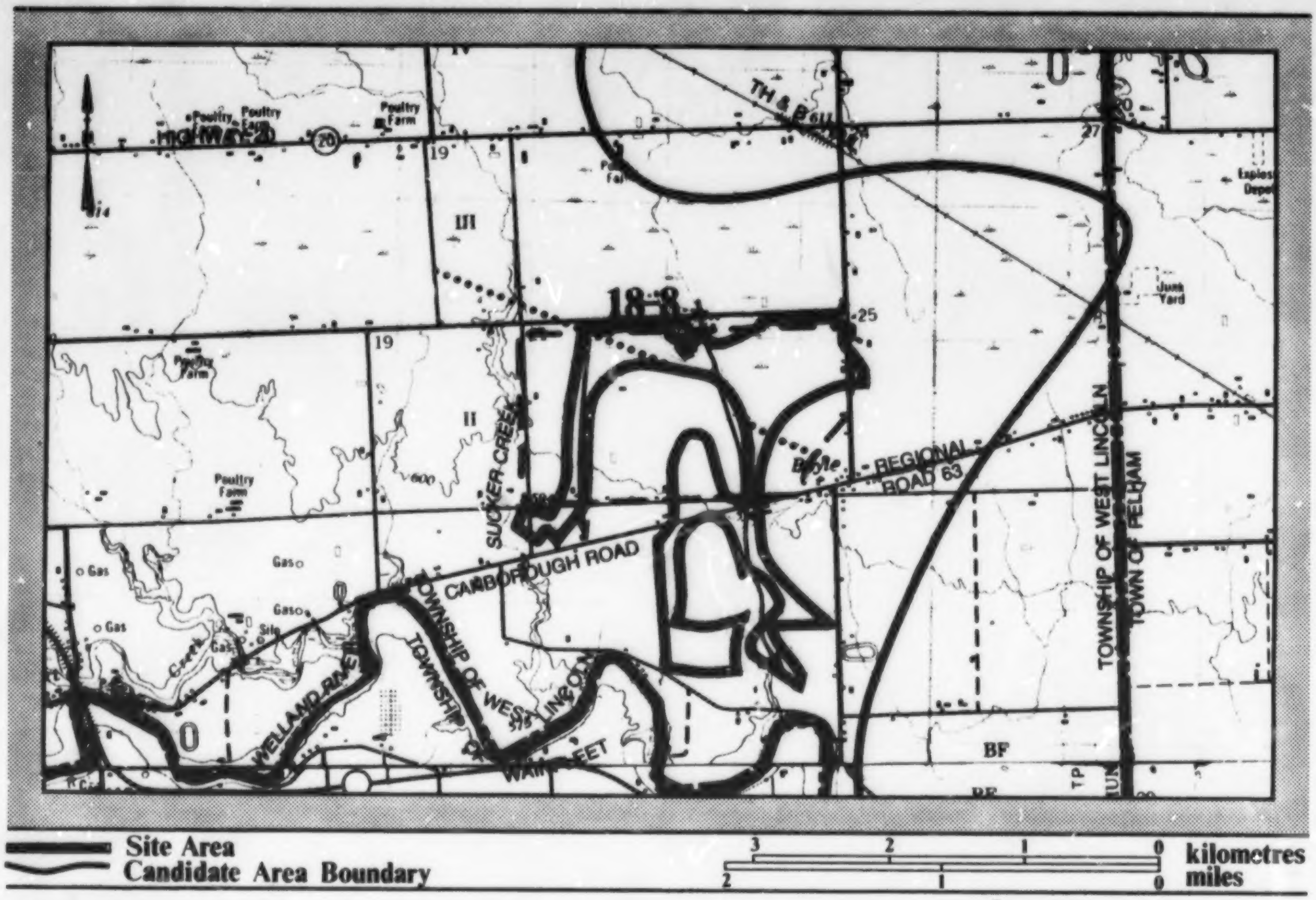
System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Expansion of the site area boundaries is restricted by candidate area boundaries to the north, east and south; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the west; and a residential area (Boyle) to the west and south.

LF-7C


Highway 20
Poultry Farm
Poultry Farm
Poultry Farm
Poultry Farm
TH & Bell
Explos Depot
Junk Yard
18-8
III
II
19
19
25
27
20
600
Sucker Creek
Boyle
Regional Road 63
Carborough Road
Township of West Lincoln
Town of Pelham
Township of West Lincoln
Township of Wainfleet
Welland River
Creek
Gas
Gas
Gas
Gas
Gas Site
BF
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Two stream courses and Bell lines crosses the site area.

Although the site area is irregularly shaped, sufficient constraint-free area remains in which to locate a landfill or integrated facility. The site area is also identified as having highly suitable hydrogeology. It was therefore decided to retain this site area for further consideration.

Adjacent Constraints:

Expansion is restricted by a residential area (Boyle) to the east and south, Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the south, west and north; SEU 18-8 and the site area boundary of LF-10C to the north and Class 1 or 2 row crops or corn-wheat to the east.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

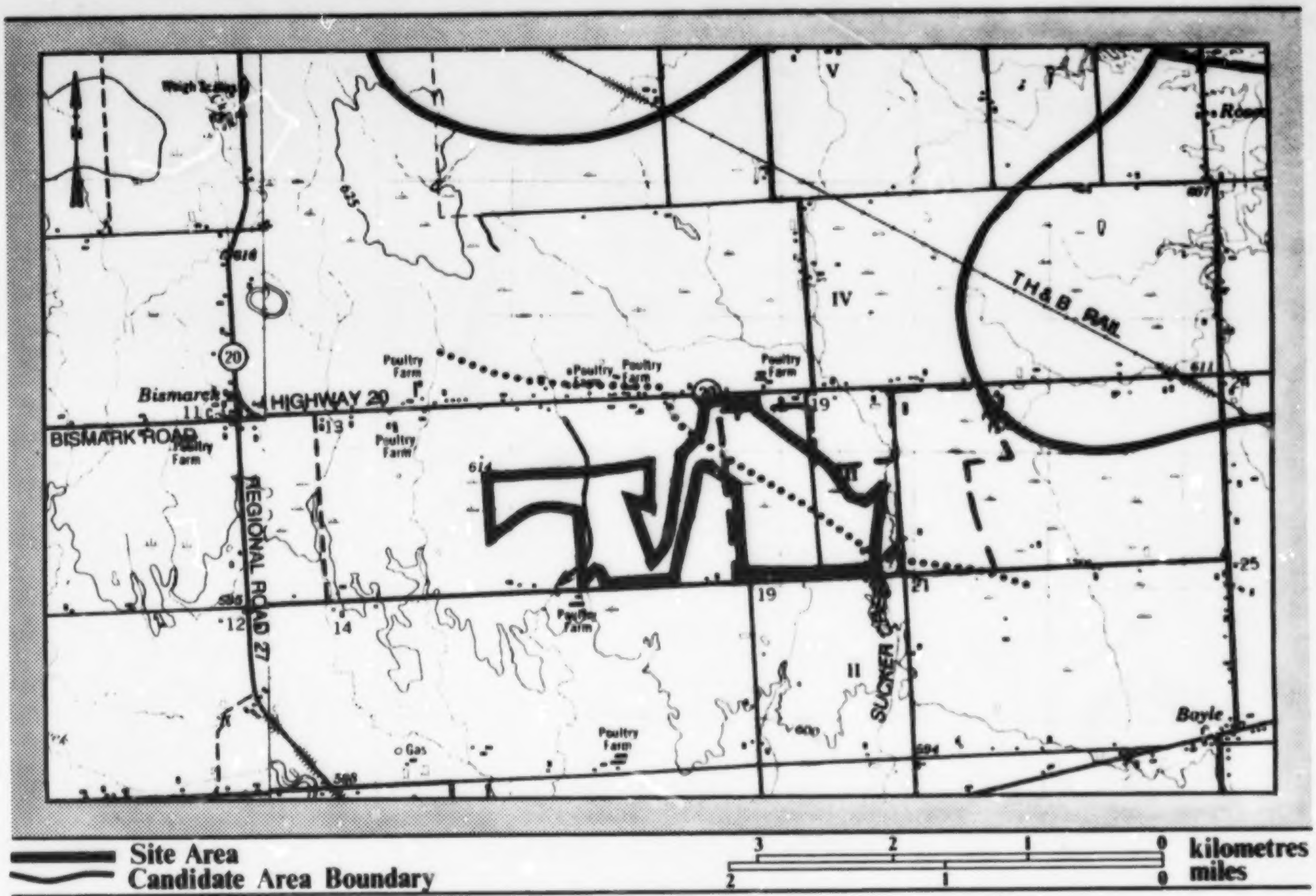
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-8C


Bismarck
HIGHWAY 20
BISMARK ROAD
REGIONAL ROAD 27
20
Poultry Farm
TH&B RAIL
SUCKER CREEK
Boyle
Gas
IV
V
II
11
12
13
14
19
21
25
Site Area
Candidate Area Boundary
kilometres
miles
3
2
1
0
2
1
0

Site Constraints:

A stream course crosses the west portion of the site area. Bell lines also cross the site area.

The west portion of the site area is irregularly shaped and is not large enough to accommodate a landfill or integrated facility. The east portion of the site area is large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion is constrained by a floodplain to the east; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east, south and west; Class 3 row crops or corn-wheat to the south; Class 1 or 2 row crops or corn-wheat to the north and east; and Provincial Highway 20 and a residential area to the north.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

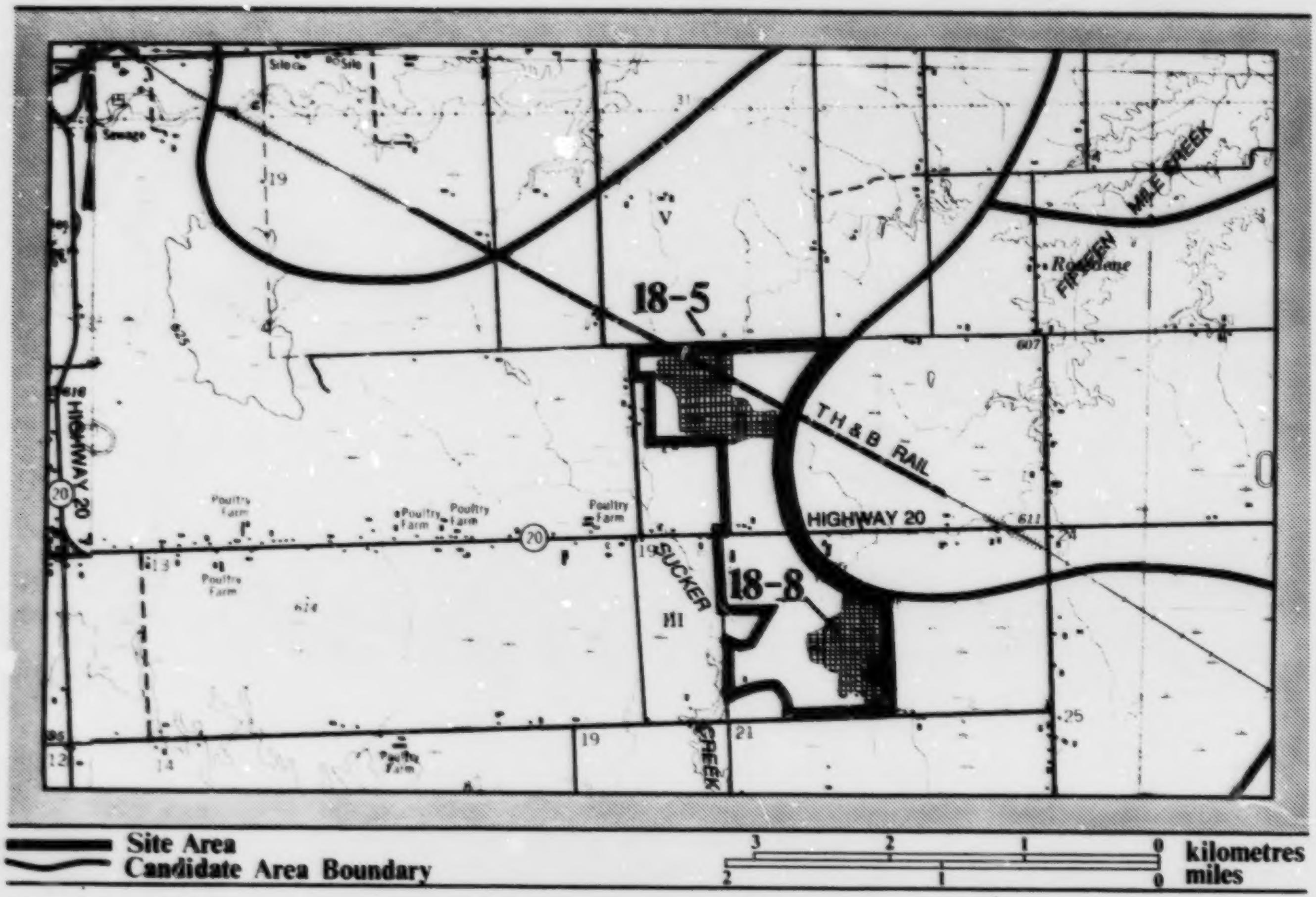
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-9C


18-5
18-8
TH & B RAIL
HIGHWAY 20
HIGHWAY 20
FIFTEEN MILE CREEK
SUCKER CREEK
Poultry Farm
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEUs 18-8 and 18-5. Provincial Highway 20 and a Toronto, Hamilton and Buffalo Railways rail line cross the site area.

The remaining unconstrained area is not large enough to accommodate a landfill or integrated facility.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

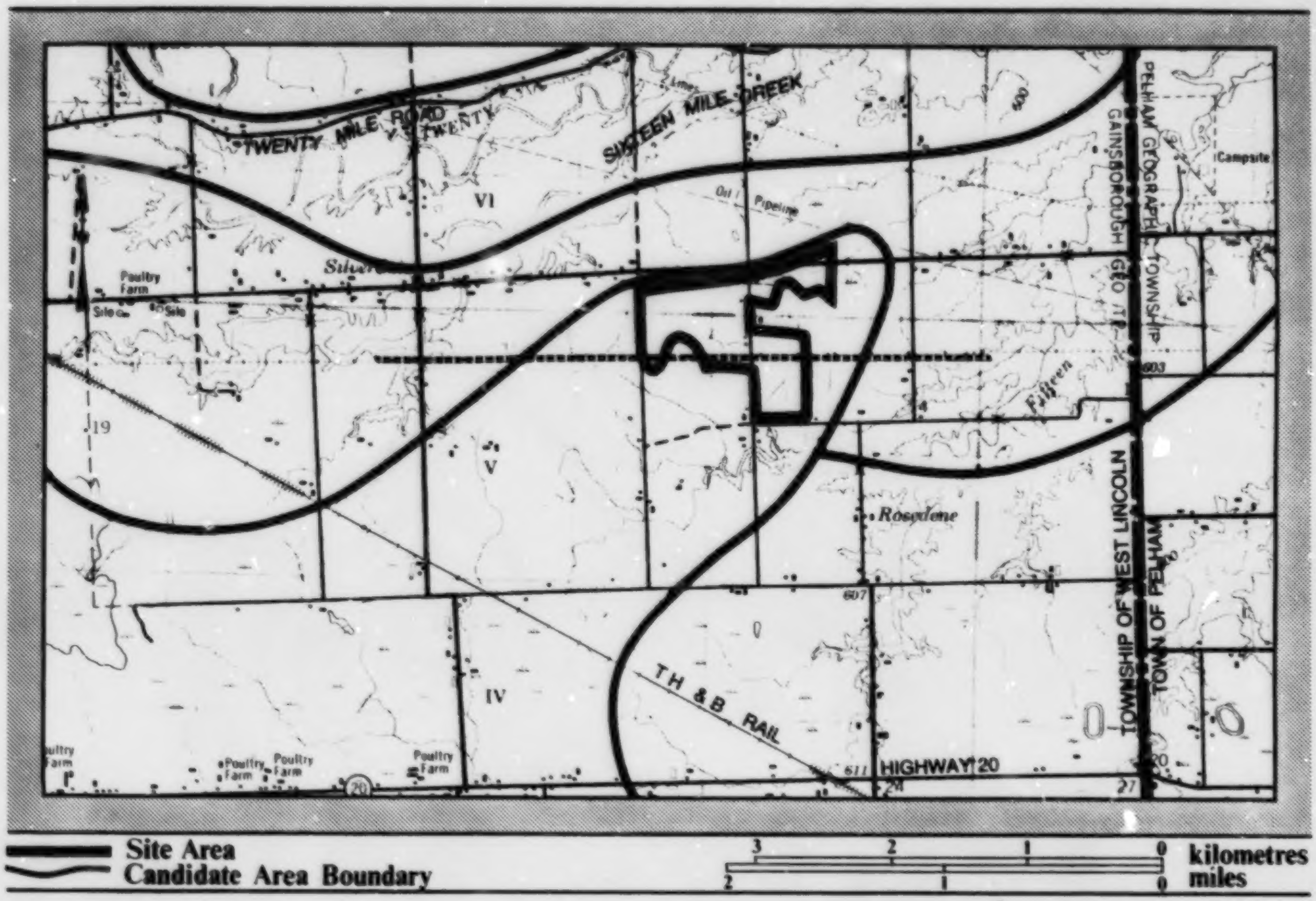
System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Site area boundary expansion is constrained to the north by Class 1 or 2 mixed, cereal grain, hay-grain, or hay (good quality) and Class 1 or 2 and 3 row crops or corn-wheat; to the east by the candidate area boundary; to the west by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality), Class 1 or 2 row crops or corn-wheat, a floodplain, and a stream course; and to the south by site area boundary of LF-8C.

LF-10C


TWENTY MILE ROAD
TWENTY
SIXTEEN MILE CREEK
VI
V
IV
Oil / Pipeline
Silver
Poultry Farm
Sites
19
Rosedene
Fifteen
607
603
611
HIGHWAY 20
24
27
20
TH & B RAIL
Poultry Farm
TOWNSHIP OF WEST LINCOLN
TOWN OF PELHAM
PELHAM GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO. TP.
Campsite
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

Ontario Hydro transmission lines cross the south portion of the site area.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by the candidate area boundary to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east and west; and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and Class 3 row crops or corn-wheat to the south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

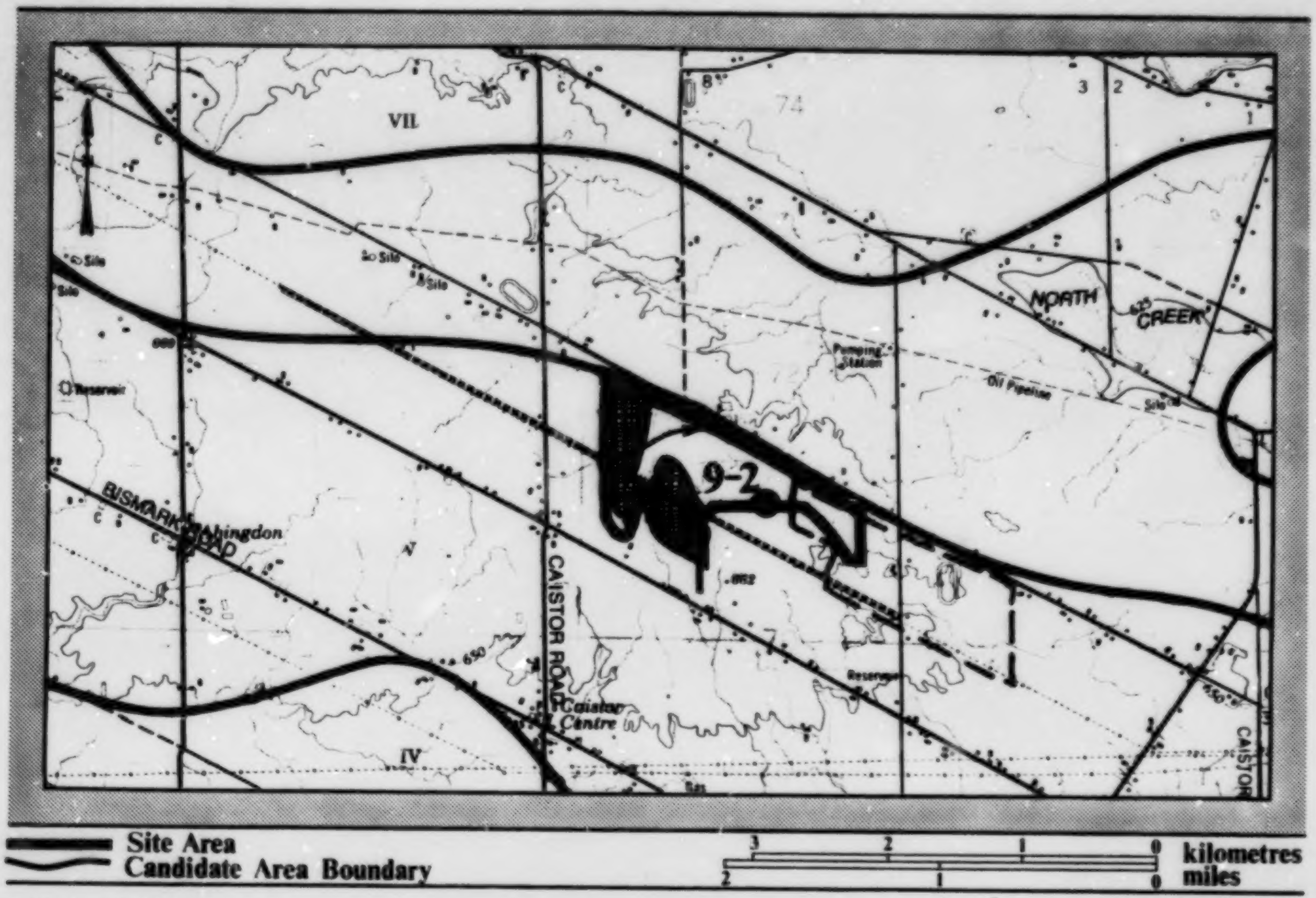
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-11C



VII
74
3
2
1
8
NORTH CREEK
Pumping Station
Oil Pipeline
Reservoir
Silo
9-2
BISMARK ROAD
Abingdon
CAISTOR ROAD
Caistor Centre
650
IV
CAISTOR
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 9-2 is found within the site area boundaries. An Ontario Hydro transmission corridor crosses the south portion of the site area. A steam crosses the northwest corner of the site area.

The remaining constraint-free area is irregularly shaped and is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by the candidate area boundary and Ontario Hydro transmission lines to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east and west; and a wetland and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the south.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

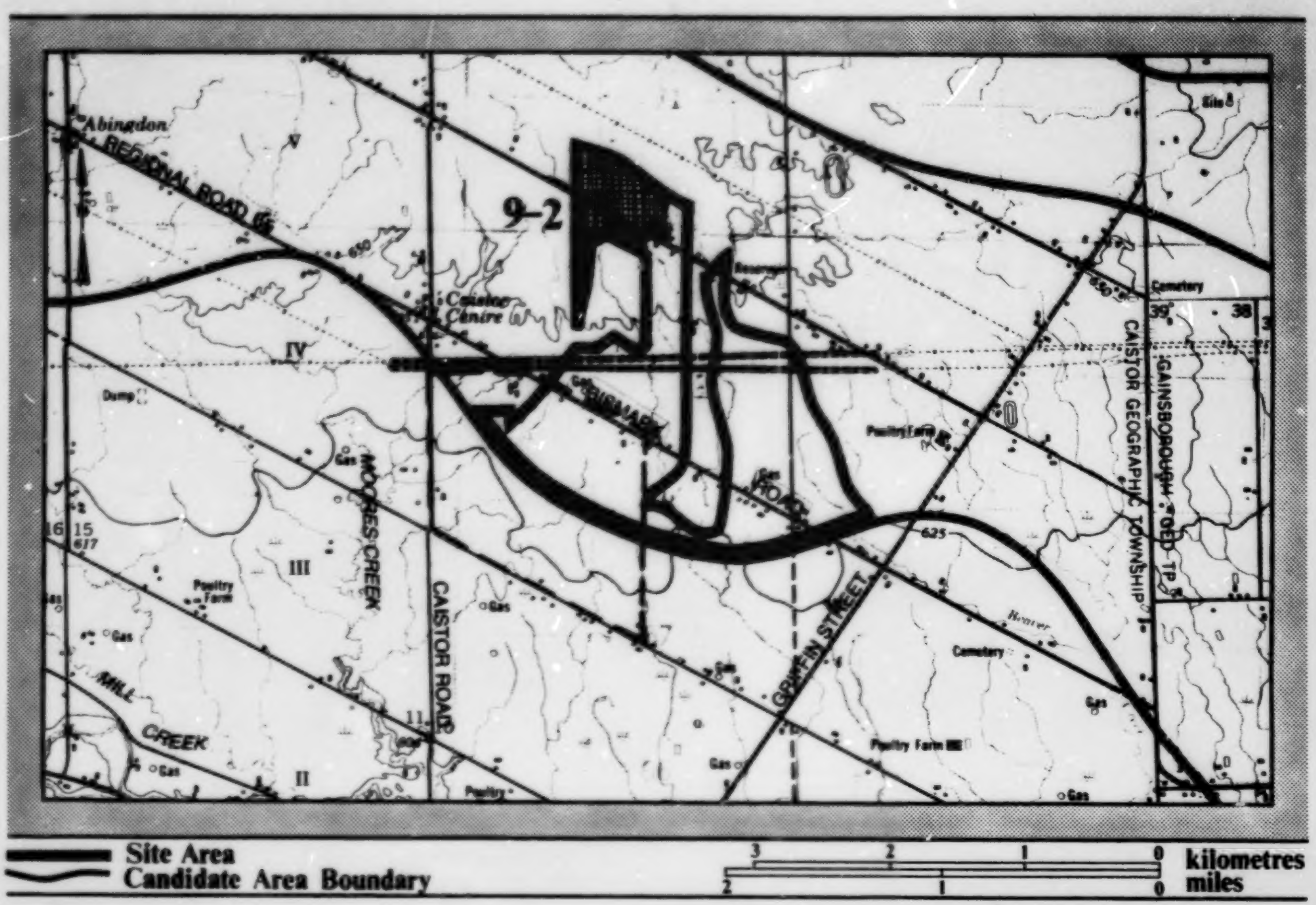
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-12C


Abingdon
REGIONAL ROAD 65
N
9-2
650
Caistor Centre
IV
Dump
BISMARK
ROAD
Gas
MOORES CREEK
CAISTOR ROAD
III
16
15
Poultry Farm
MILL CREEK
II
11
Poultry
Reservoir
Poultry Farm
625
GRIFFIN STREET
Beaver
Cemetery
Poultry Farm
CAISTOR GEOGRAPHIC TOWNSHIP
GAINSBOROUGH TOWNSHIP
Cemetery
39
38
Site
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 9-2 occurs in the north portion of the site area. Niagara Region Road 65 crosses the south portion and two Ontario Hydro transmission lines cross the central portion of the site area.

The east portion of the site area is irregularly shaped and was not large enough to accommodate a landfill or integrated facility. The southwest portion was examined at a greater level of detail (1:10,000). However, it also lacks sufficient area to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by wetland areas to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east; a candidate area boundary to the south and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a residential area (Caistor Centre) to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

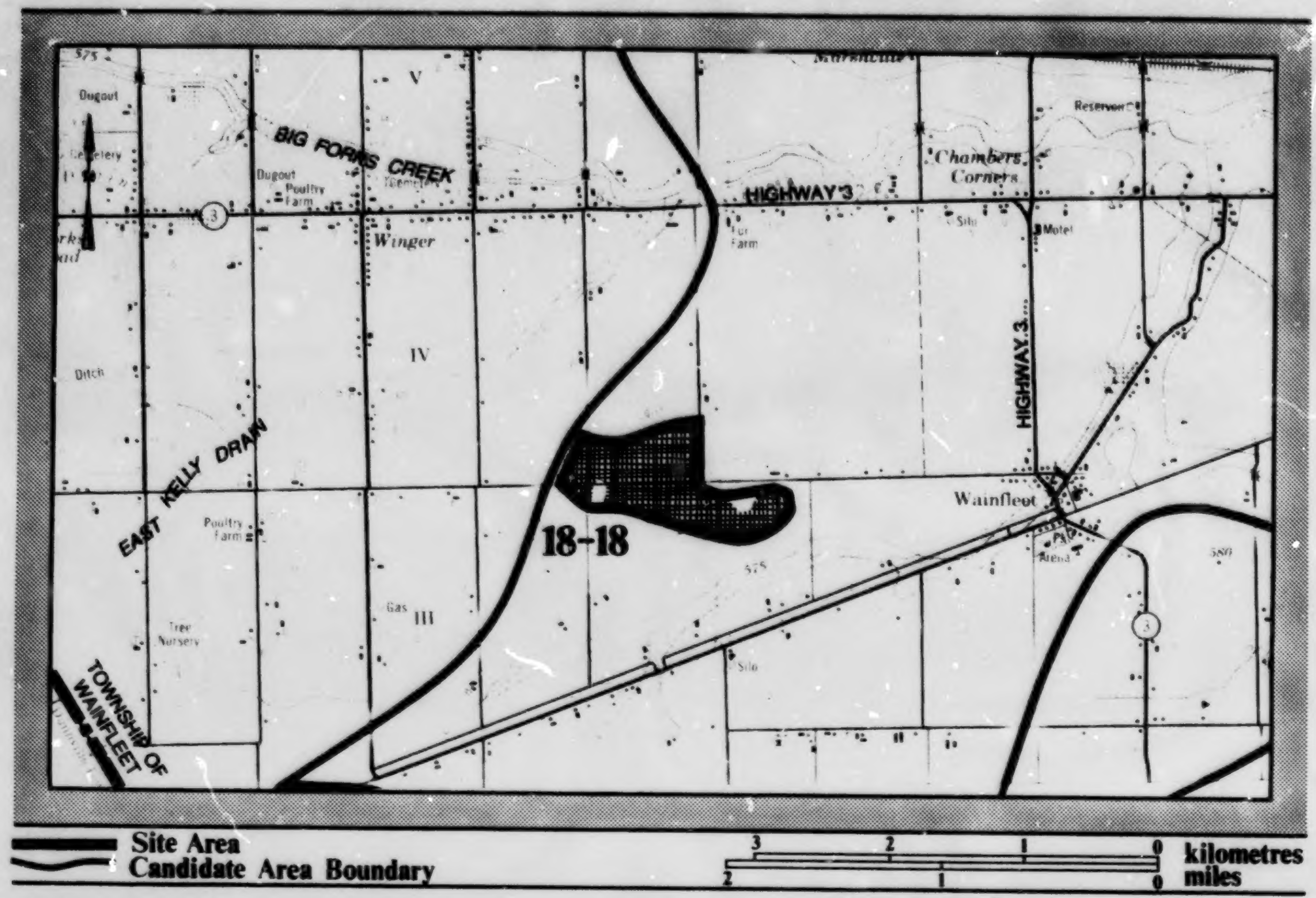
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-13C


575
Dugout
Cemetery
V
BIG FORKS CREEK
Dugout
Poultry Farm
Cemetery
HIGHWAY 3
Chambers Corners
Reservoir
3
Winger
Fur Farm
Silo
Motel
IV
Ditch
HIGHWAY 3
EAST KELLY DRAIN
Wainfleet
18-18
Poultry Farm
575
PS
Arena
580
Gas
III
3
Tree Nursery
Silo
TOWNSHIP OF WAINFLEET
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-18.

Insufficient constraint-free area remains in which a landfill or integrated facility could be located.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 1 or 2 row crops or corn-wheat and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east; Class 1 or 2 row crops or corn-wheat to the south; and a candidate area boundary to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

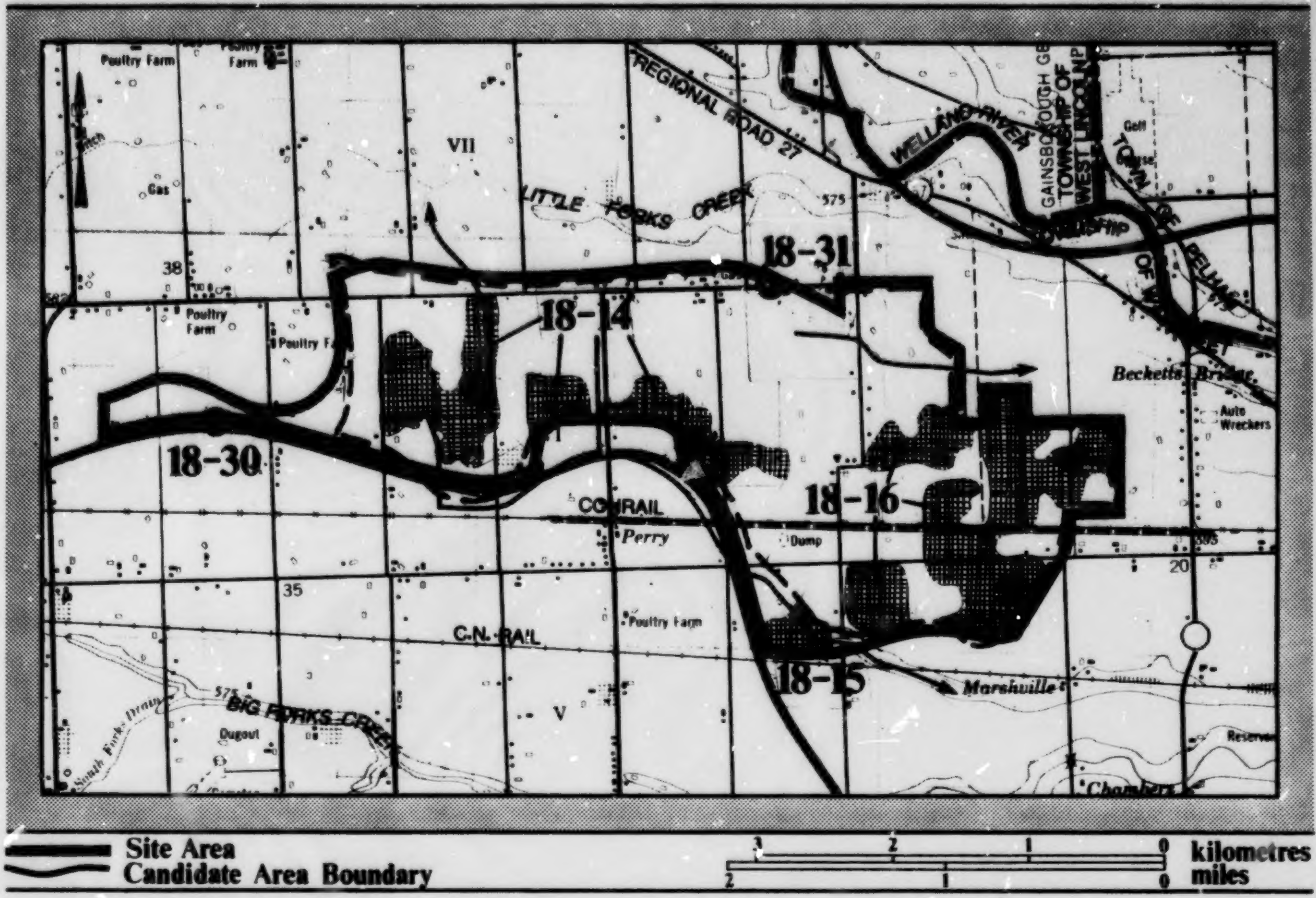
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-14C


Poultry Farm
Poultry Farm
Ditch
Gas
VII
38
Poultry Farm
Poultry F
REGIONAL ROAD 27
LITTLE FORKS CREEK
575
WELLAND RIVER
GAINSBOROUGH GEOGRAPHIC TOWNSHIP OF WEST LINCOLN
TOWN OF PELHAM
Golf Course
18-31
18-14
18-30
18-16
18-15
Becketts Bridge
Auto Wreckers
CONRAIL
Perry
Dump
20
35
C.N. RAIL
Poultry Farm
V
Marshville
BIG FORKS CREEK
575
Dugout
South Fork Drain
Chambers
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEUs 18-14, 18-15, 18-16, 18-30 and 18-31 are located within and/or adjacent to the site area boundaries. A ConRail rail line crosses the south portion of the site area and stream courses are found in the northern and southern portion of the site area.

Sufficient area remains in which a landfill or integrated facility could be located. However, the site area was dropped from further consideration due to the presence of numerous SEUs within and adjacent to the site area, large numbers of residences (3 groups of 10 or more within 1 - 1.2 km, within the site area) and its indirect access. An adequate range of site areas remained which had comparable hydrogeology but did not have comparable disadvantages.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and row crops or corn-wheat to the north; a residential area to the east; Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) and specialty crops to the southeast; a stream course, a residential area, Class 1 or 2 row crops or corn-wheat and a candidate area boundary to the south; and a residential area and specialty crops to the west.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☒
4. land use ☒
5. agriculture ☐
6. social ☐
7. transportation ☒

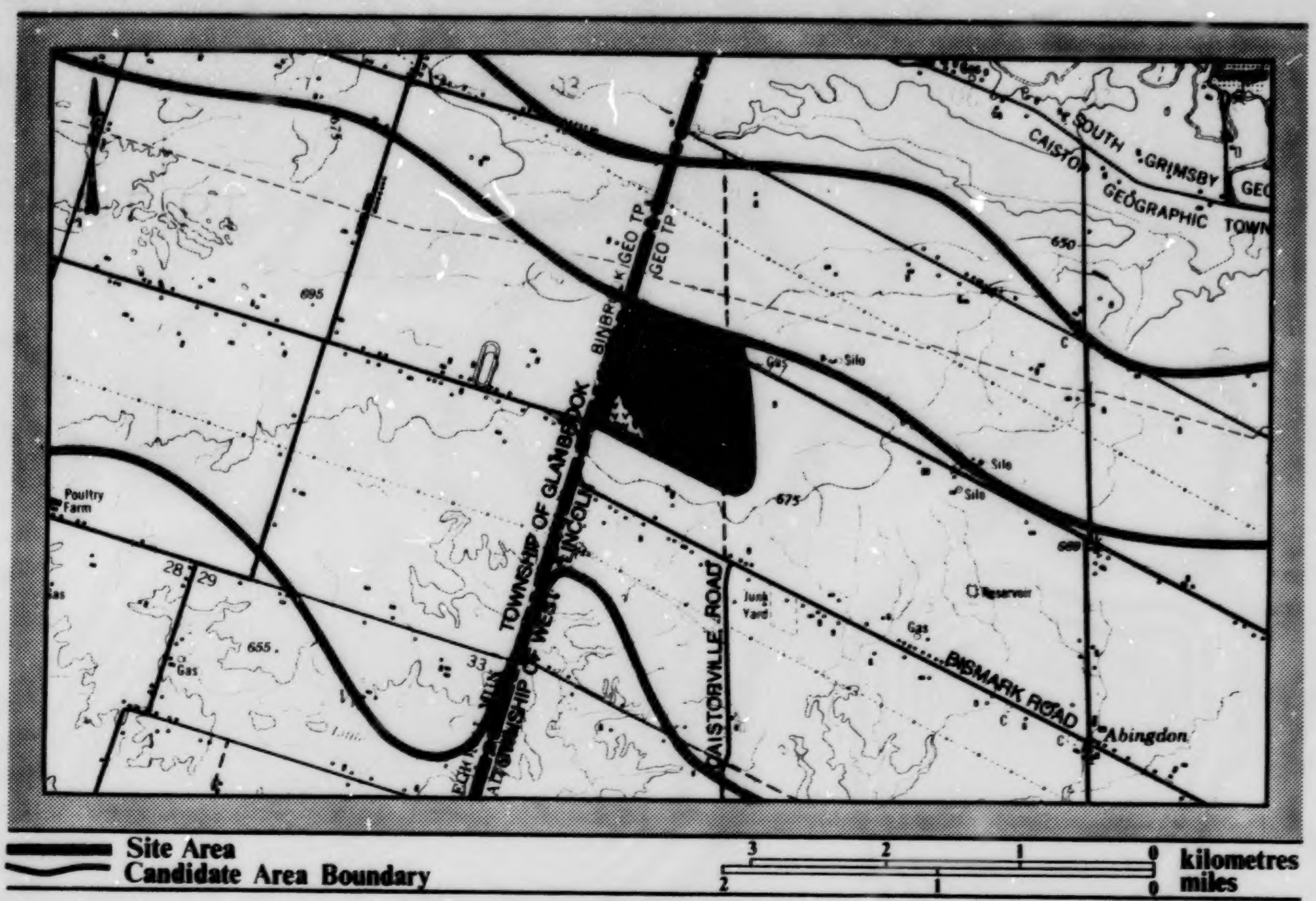
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-15C


SOUTH GRIMSBY GEO
CAISTOR GEOGRAPHIC TOWN
650
695
BINBROOK GEO TP
GEO TP
TOWNSHIP OF GLANBROOK
TOWNSHIP OF WEST LINCOLN
Silo
Silo
Silo
675
680
Poultry Farm
28
29
Gas
655
Gas
33
Junk Yard
CAISTORVILLE ROAD
Reservoir
Gas
BISMARK ROAD
Abingdon
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Agricultural exclusionary factors Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) and a residential area are found within the site area boundaries.

Insufficient unconstrained area remains in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a candidate area boundary to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a wetland area to the east; a residential area to the south; and Class 1 or 2 row crops or corn-wheat to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☒
5. agriculture ☒
6. social ☐
7. transportation ☐

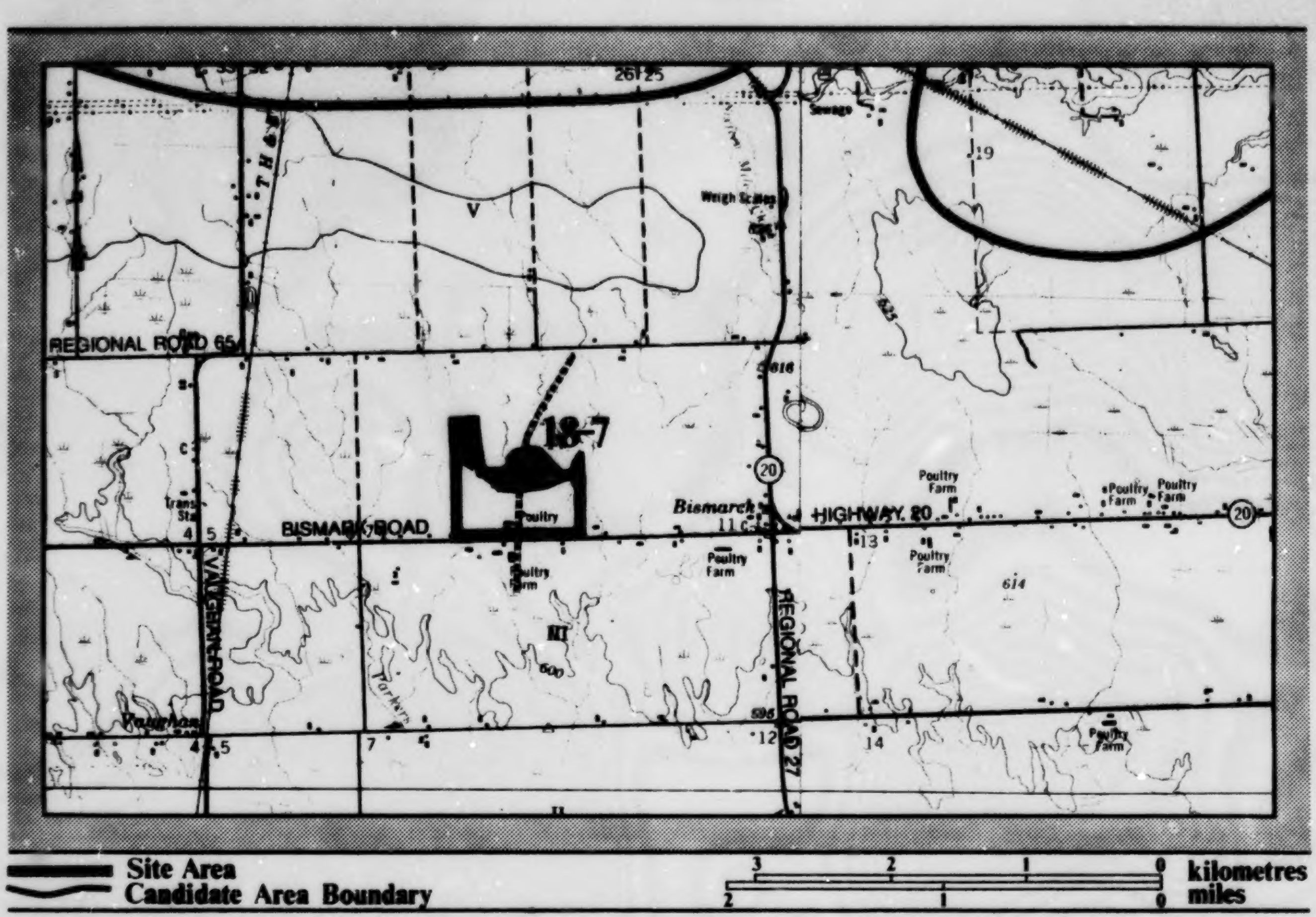
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-16C


REGIONAL ROAD 65
BISMARK ROAD
HIGHWAY 20
REGIONAL ROAD 27
VAUGHAN ROAD
18-7
Poultry
Poultry Farm
Bismarck
Weigh Scales
Sewage
20
19
13
14
12
7
614
600
616
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

SEU 18-7 occurs in the north portion of the site area. Ontario Hydro transmission lines bisect the site area.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a wetland area to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east, west and south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

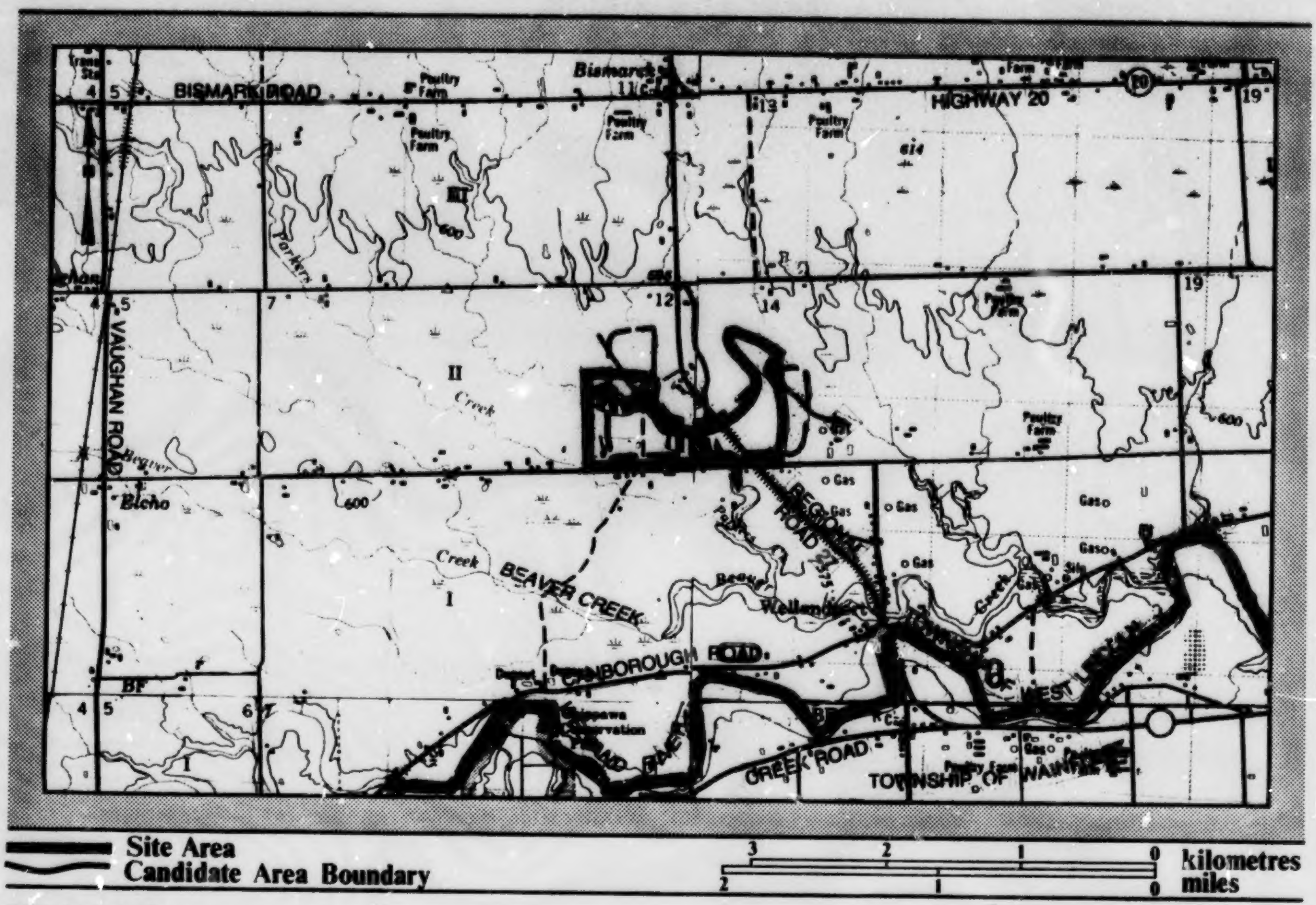
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-17C


BISMARK ROAD
Bismarck
HIGHWAY 20
Poultry Farm
VAUGHAN ROAD
Beaver Creek
Bicho
600
II
I
BEAVER CREEK
REGIONAL ROAD 27
Gas
Wellandport
CANBOROUGH ROAD
CREEK ROAD
WEST LINCOLN
TOWNSHIP OF WAINFLEET
BF
3
2
1
0
kilometres
2
1
0
miles

Site Area
Candidate Area Boundary

Site Constraints:

The site area is crossed by Niagara Region Road 27, a floodplain and two stream courses.

The remaining constraint-free area is not large enough for a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north, south and east, and by Class 1 or 2 row crops or corn-wheat to the west.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

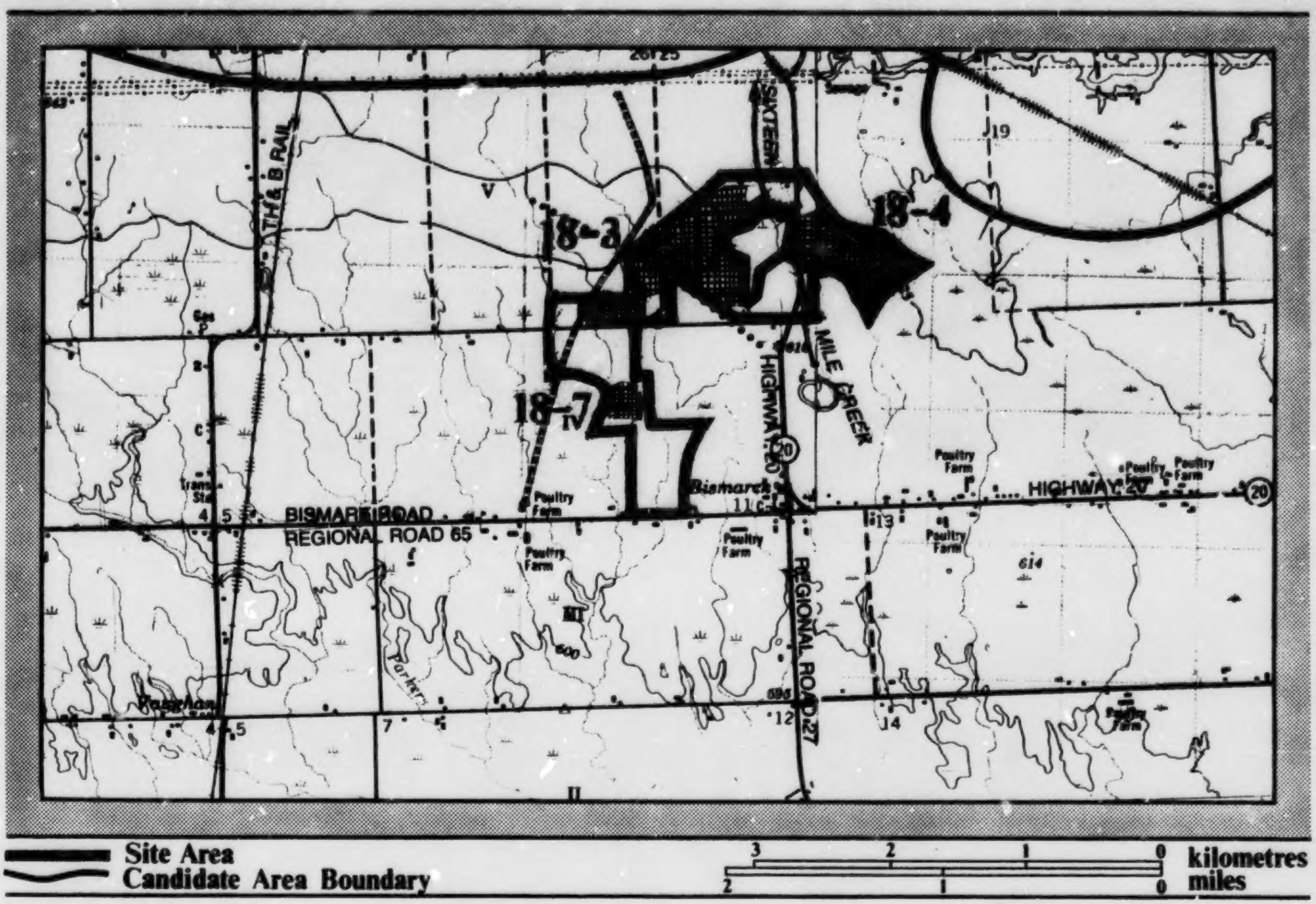
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-18C


18-3
18-4
18-7
TH&B RAIL
SIXTEEN MILE CREEK
HIGHWAY 20
BISMARCK ROAD
REGIONAL ROAD 65
REGIONAL ROAD 27
Bismarck
Poultry Farm
Parker
Gas
Trans Sta
20
19
13
14
12
11
4
5
7
614
600
595
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEUs 18-3, 18-4 and 18-7 occur within and adjacent to the site area. Provincial Highway 20 crosses the eastern portion of the site area. An Ontario Hydro transmission line and a Bell line cross the western portion of the site area.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and row crops or corn-wheat to the north and south; a residential area (Bismarck) and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east; and wetlands and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

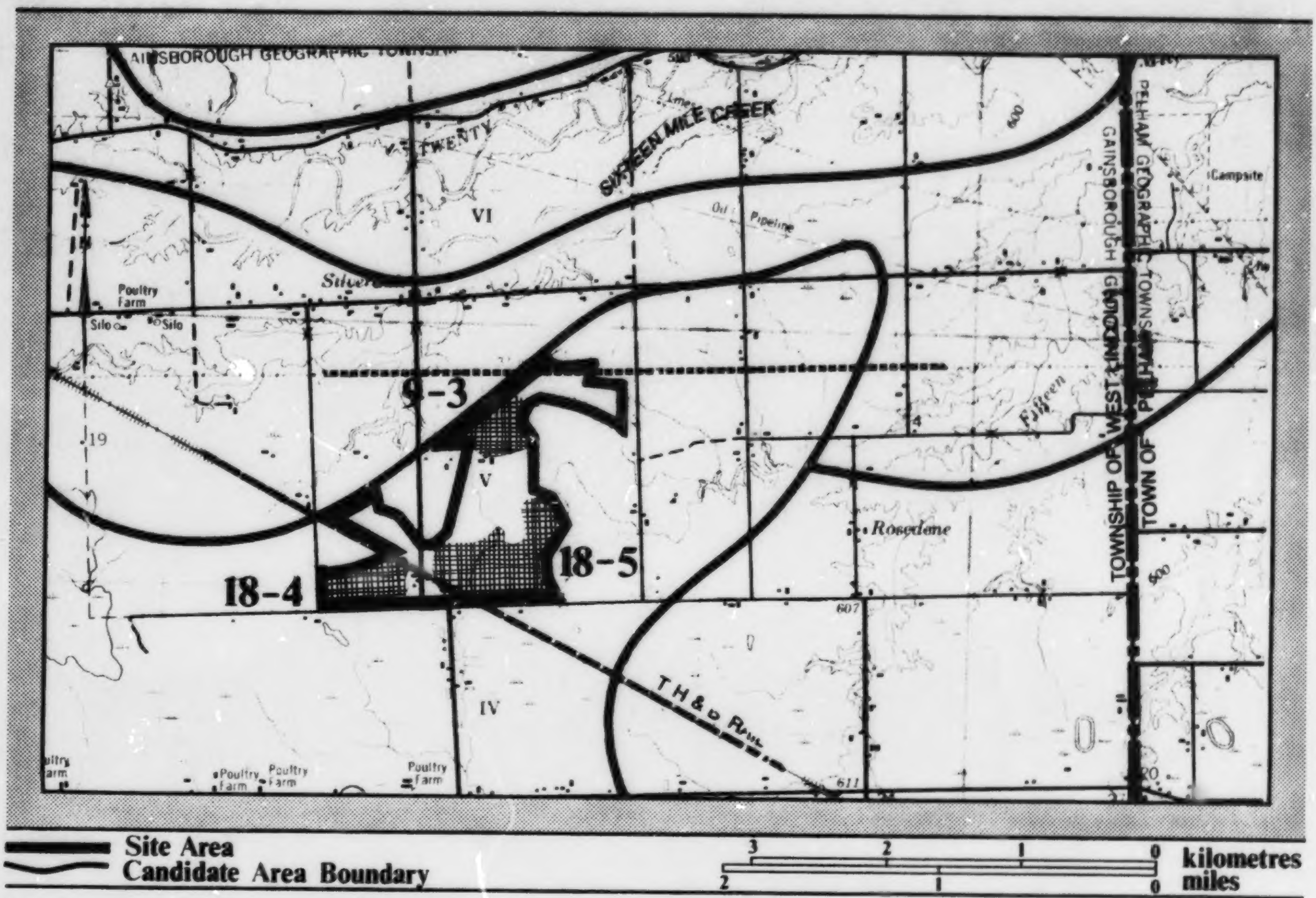
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-19C


GAINSBOROUGH GEOGRAPHIC TOWNSHIP
TWENTY
SIXTEEN MILE CREEK
VI
Oil Pipeline
Silver
Poultry Farm
Silo
Silo
9-3
19
V
18-5
18-4
Rosedene
607
IV
TH & B RAIL
Poultry Farm
Poultry Farm
Poultry Farm
Poultry Farm
611
Fifteen
Campsite
GAINSBOROUGH GEOGRAPHIC TOWNSHIP
TOWNSHIP OF WEST LINCOLN
TOWN OF PELHAM
PELHAM GEOGRAPHIC TOWNSHIP
600
600
20
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEUs 9-3, 18-4 and 18-5. In addition, a Toronto, Hamilton and Buffalo Railways rail line crosses the southwest portion of the site area and an Ontario Hydro transmission line crosses the extreme northern portion of the site area.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the northeast; a wetland area and Class 3 or 4 row crops or corn-wheat to the east; SEU 18-4 to the west; SEU 18-5 to the south and the candidate area boundary to the northeast.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

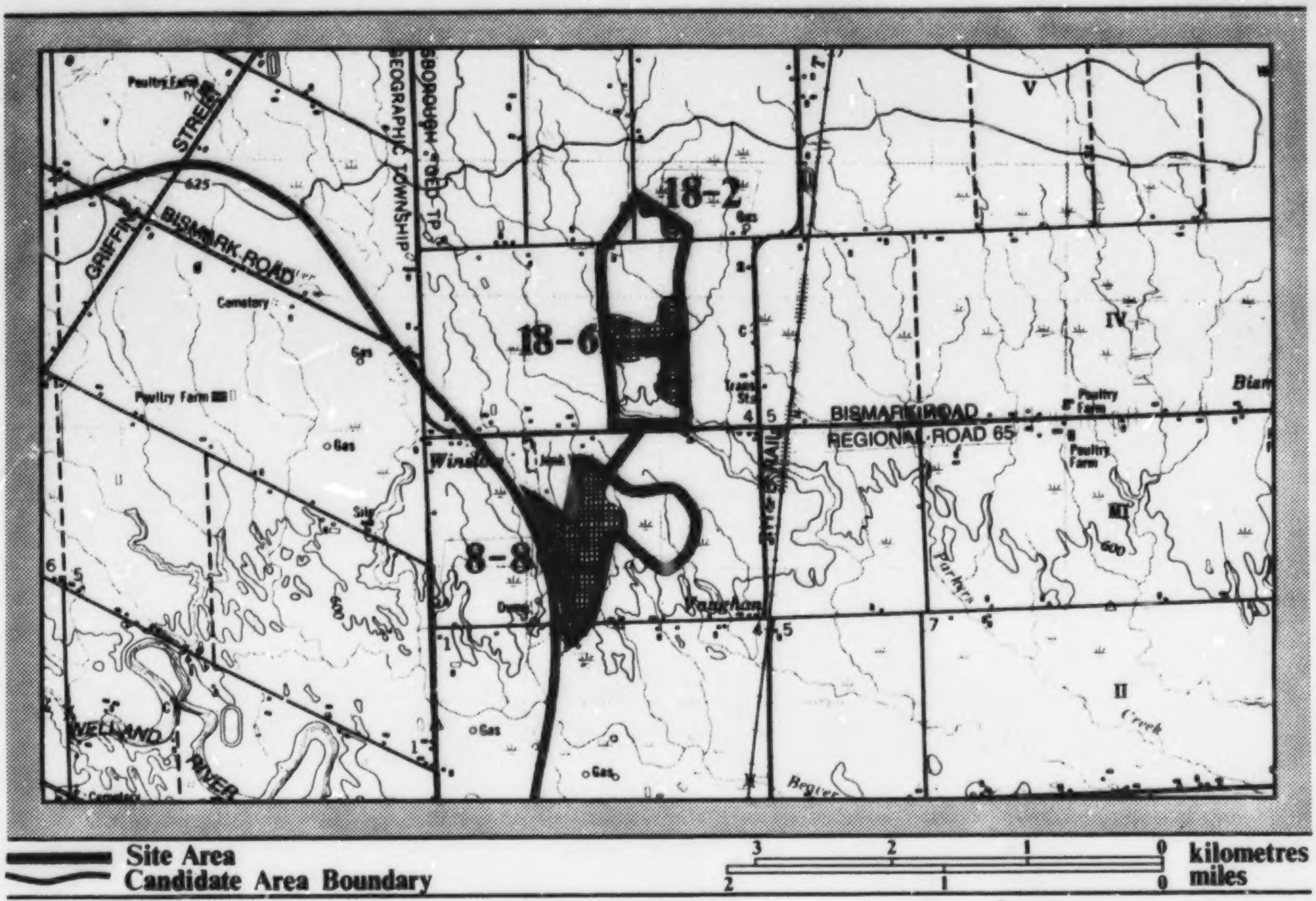
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-20C


18-2
18-6
8-8
BISMARK ROAD
REGIONAL ROAD 65
GRIFFIN STREET
WELLAND RIVER
625
Poultry Farm
Cemetery
Gas
Winslow
Vaughan
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEUs 18-6 and 18-2 in the north portion and SEU 8-8 in the south portion.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a wetland area to the north; Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the east and south; and a candidate area boundary and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the west.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

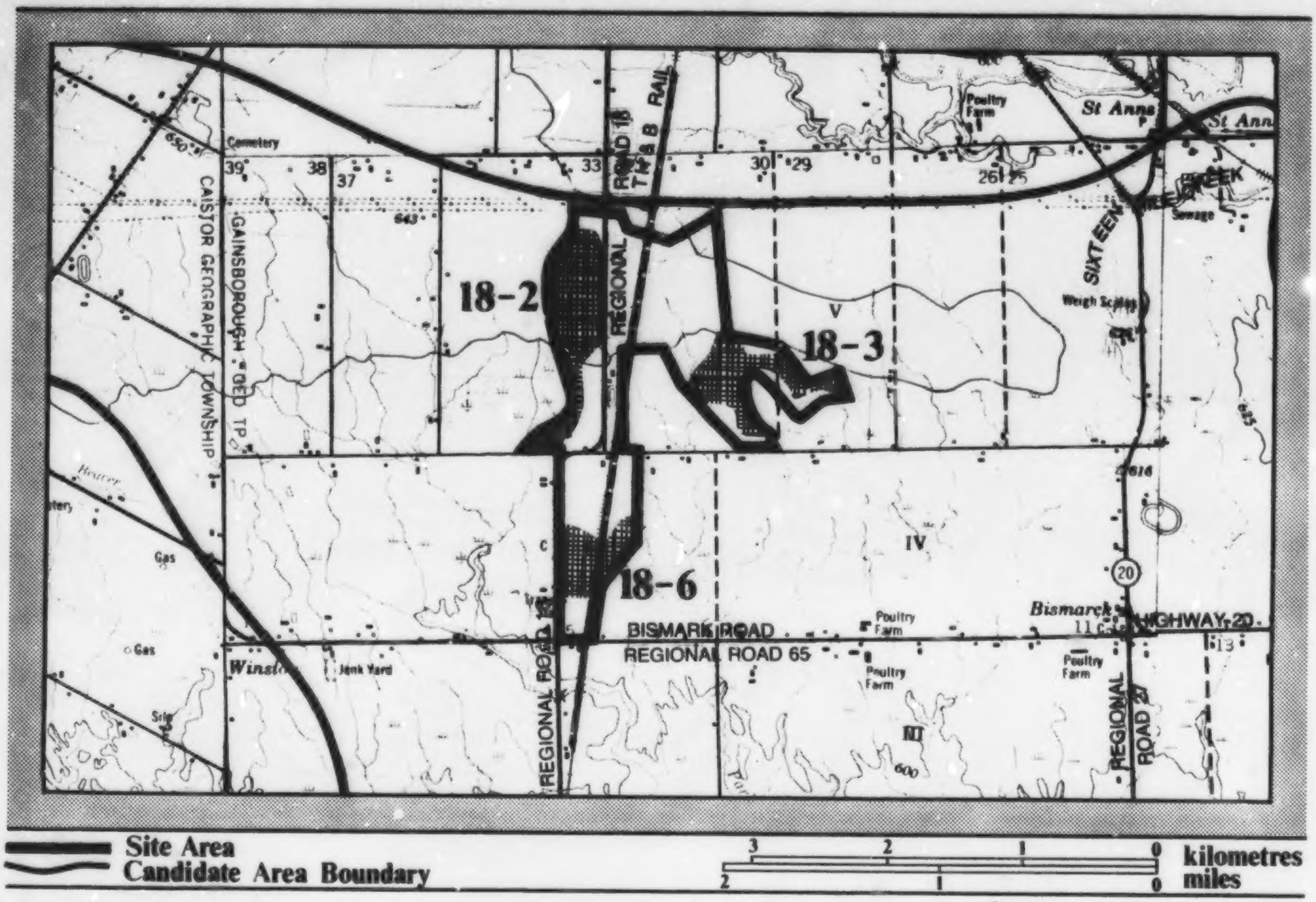
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-21C


18-2
18-3
18-6
REGIONAL ROAD 16
TH & B RAIL
CAISTOR GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO TP
SIXTEEN MILE CREEK
St Anns
Poultry Farm
Cemetery
Weigh Scales
Sewage
Gas
Junk Yard
Winston
Bismarck
HIGHWAY 20
BISMARK ROAD
REGIONAL ROAD 65
REGIONAL ROAD 20
20
IV
V
III
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEUs 18-2, 18-3 and 18-6. In addition, Niagara Regional Road 16 and a Toronto, Hamilton and Buffalo Railways rail line cross the site area.

The remaining unconstrained area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Site area boundary expansion is constrained by a candidate area boundary and an Ontario Hydro transmission line to the north; a wetland and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a wetland to the west; and Niagara Region Road 65 and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

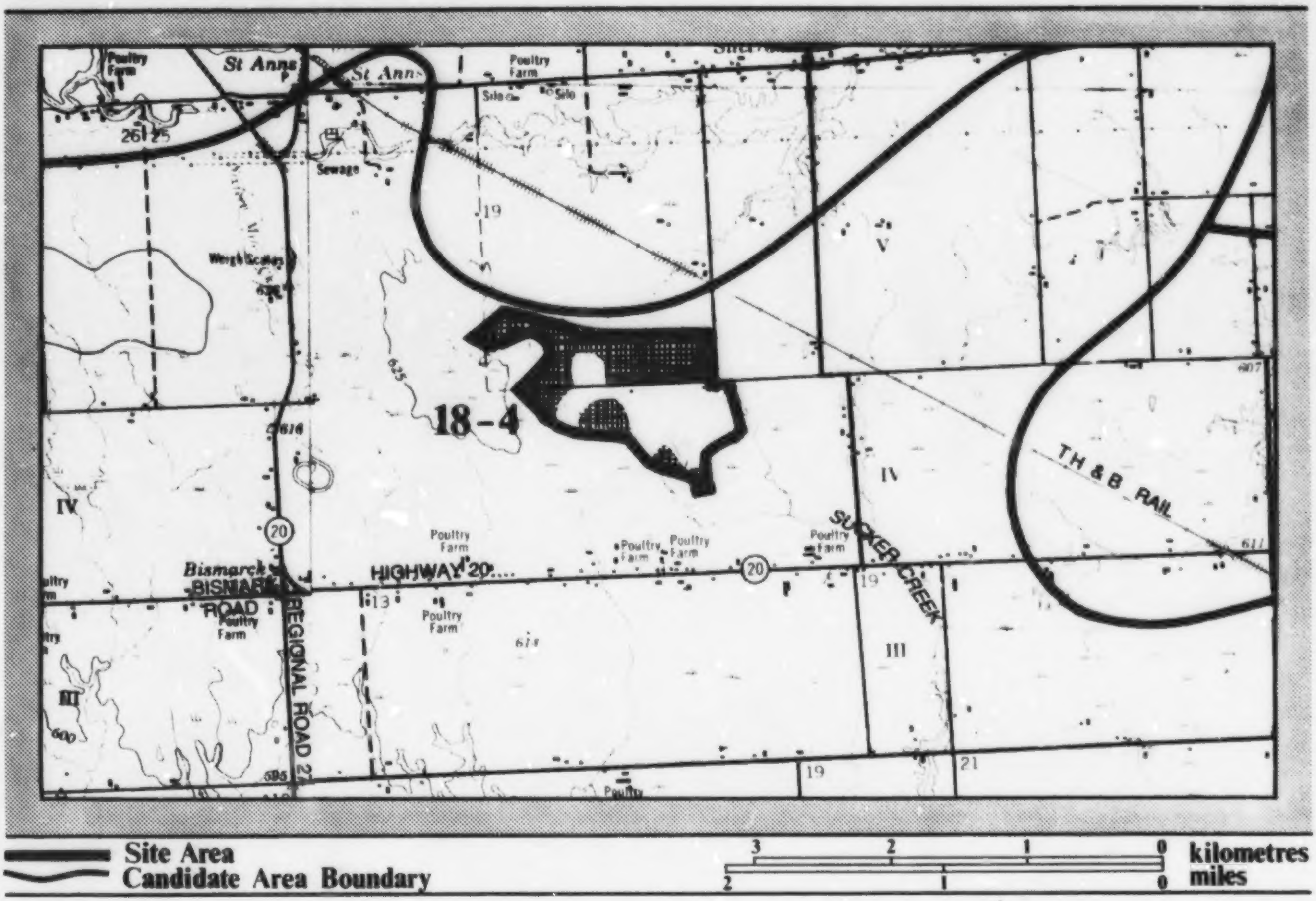
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-22C


St Anns
Poultry Farm
Silo
Sewage
Weigh Scales
19
V
IV
18-4
20
Bismarck
BISMARCK ROAD
HIGHWAY 20
SUCKER CREEK
TH & B RAIL
REGIONAL ROAD 27
13
III
19
21
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEU 18-4.

The remaining unconstrained area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and SEU 18-4 to the east; a wetland and a residential area to the south; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the west; and Class 1 or 2 mixed, cereal grain, hay-grain and hay (good quality) and a candidate area boundary to the north.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

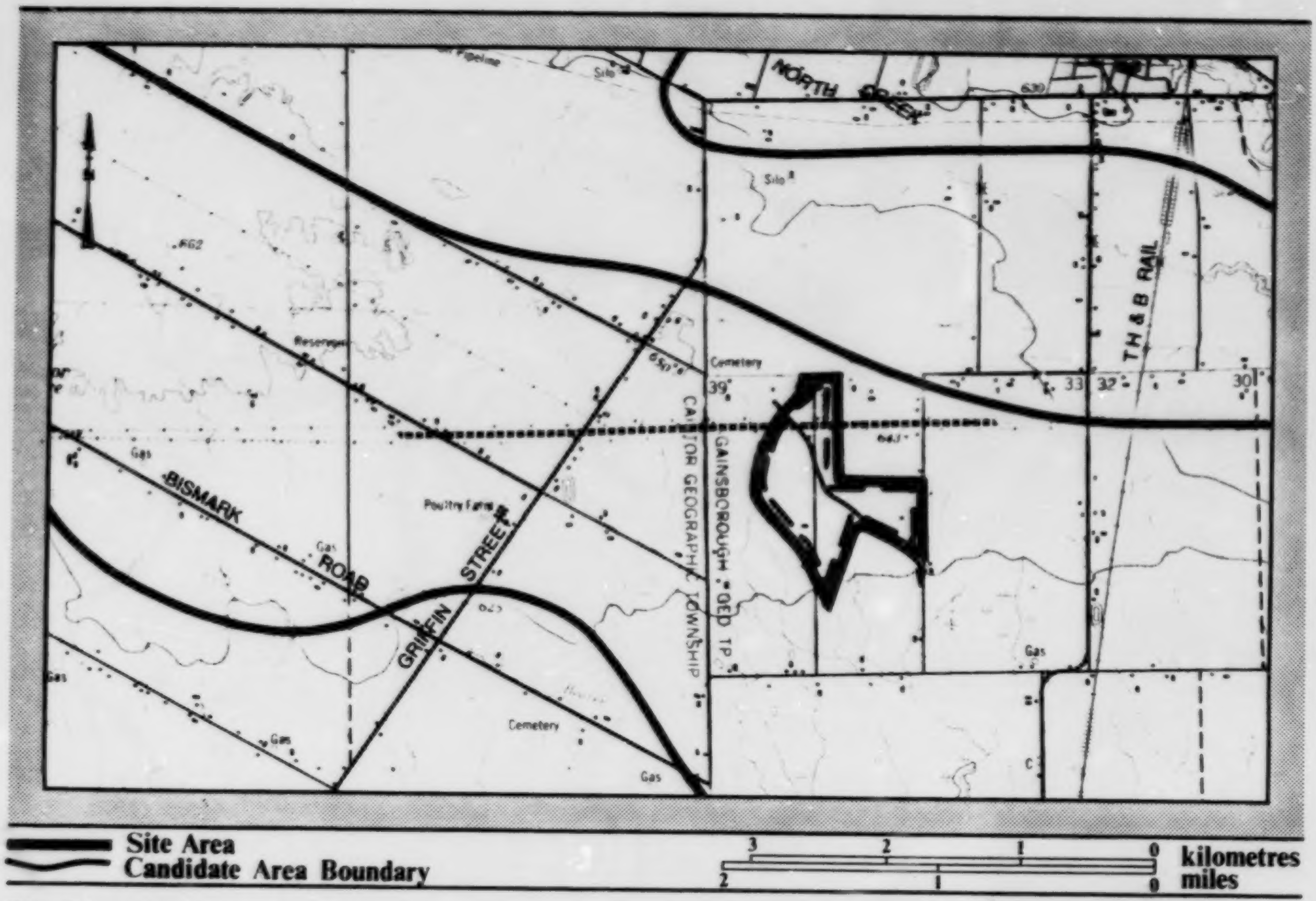
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-23C


Pipeline
Silo
NORTH CREEK
630
Silo
662
Reservoir
TH & B RAIL
Cemetery
39
33
32
30
643
Gas
BISMARK ROAD
Poultry Farm
GRIFFIN STREET
625
CAISTOR GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO TP
Cemetery
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The north portion of the site area is crossed by an Ontario Hydro transmission line. A stream course crosses the site area.

There is insufficient area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north, south, east and west.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

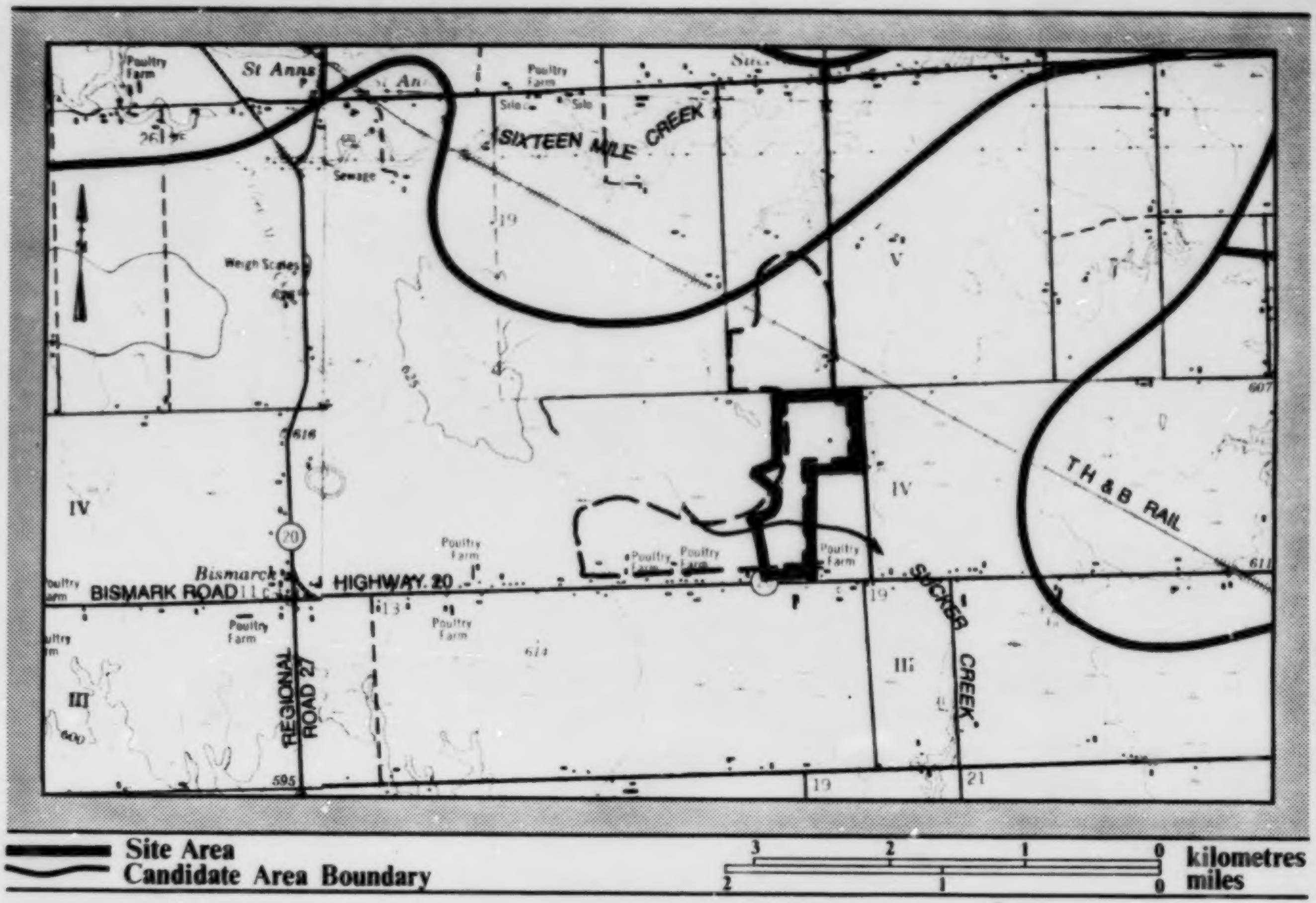
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-24C


Poultry Farm
St Anns
Silo
Poultry Farm
SIXTEEN MILE CREEK
Sewage
19
Weigh Scales
V
635
616
IV
IV
TH & B RAIL
607
611
20
Bismarck
BISMARK ROAD
HIGHWAY 20
Poultry Farm
Poultry Farm
Poultry Farm
Poultry Farm
13
Poultry Farm
614
19
SUCKER CREEK
III
REGIONAL ROAD 27
III
600
595
19
21
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by a stream course in the south portion.

The constraint-free area is irregularly shaped and is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion is constrained by SEU 18-4 to the north; Class 1 or 2 row crops or corn-wheat to the east; Class 1 or 2 mixed, cereal grain, hay grain or hay (good quality) and a residential area to the west; and Provincial Highway 20 to the south.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

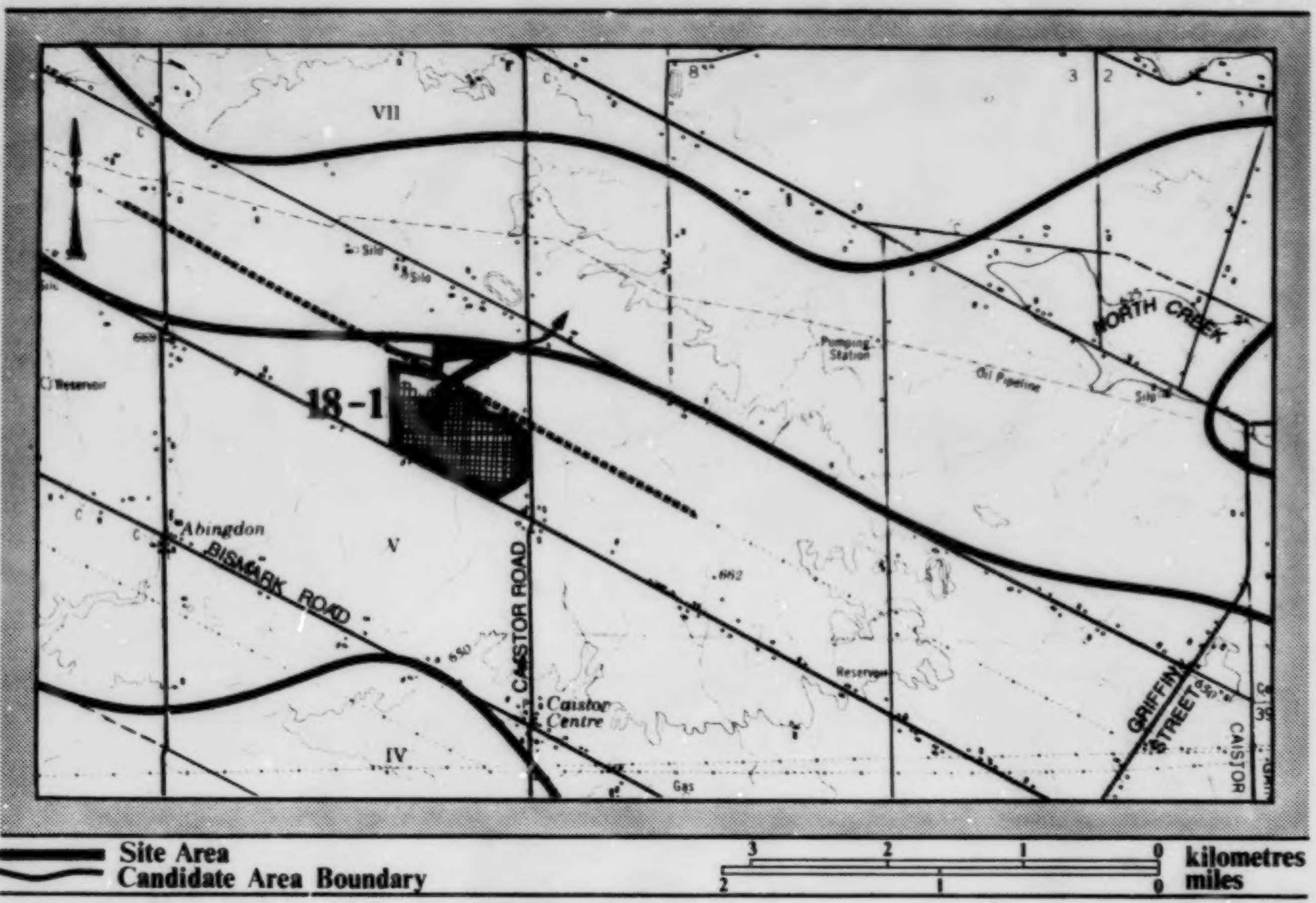
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-25C


VII
18-1
Abingdon
BISMARK ROAD
V
CAISTOR ROAD
Caistor Centre
IV
Silo
Pumping Station
Oil Pipeline
NORTH CREEK
GRIFFIN STREET
CAISTOR
Reservoir
Gas
662
650
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEU 18-1. In addition, an Ontario Hydro transmission line and a stream course cross the north portion of the site area.

There is insufficient unconstrained area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted to the north by a candidate area boundary and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east, west and south.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

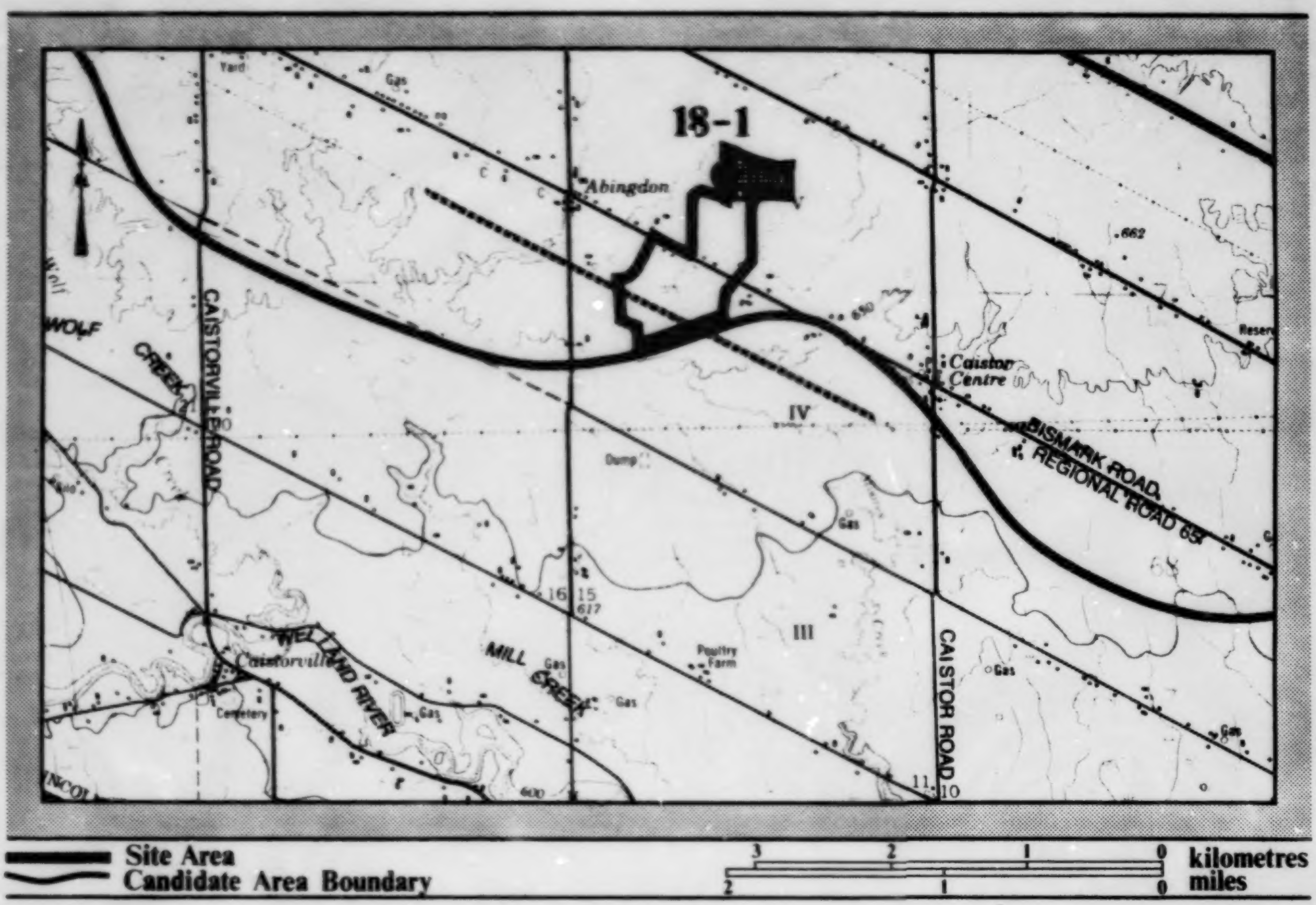
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-26C


18-1
Abingdon
WOLF CREEK
CAISTORVILLE ROAD
Caistor Centre
BISMARK ROAD
REGIONAL ROAD 65
IV
III
Dump
Gas
Poultry Farm
MILL CREEK
WELLAND RIVER
Caistorville
Cemetery
CAISTOR ROAD
.662
650
600
16
15
617
11
10
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by Niagara Region Road 65 and an Ontario Hydro transmission line. SEU 18-1 occurs in the north portion of the site area.

The remaining unconstrained area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a wetland area and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east; a candidate area boundary to the south; and Class 1 or 2 and 3 row crops or corn-wheat and a residential area (Abingdon) to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

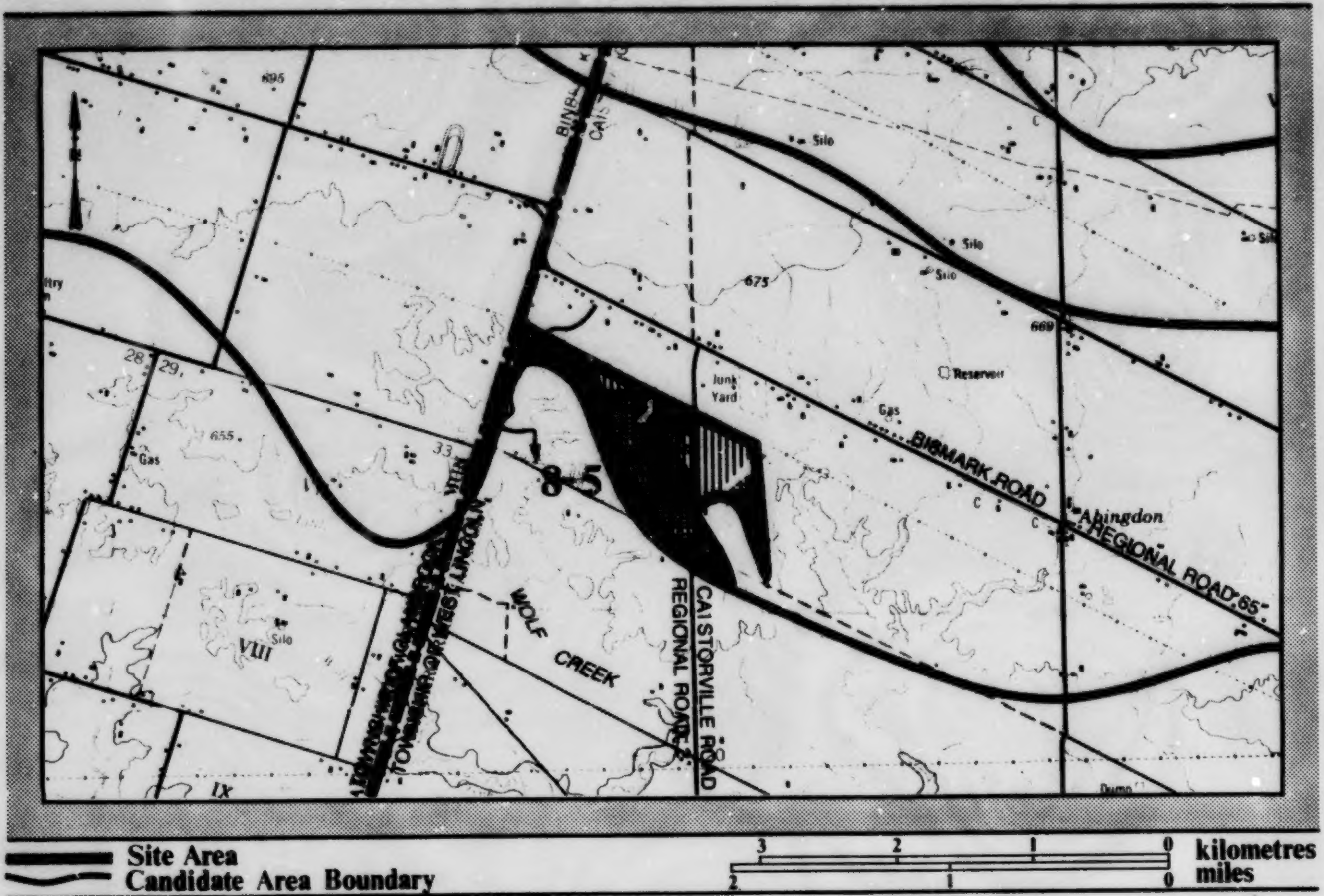
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-27C


895
Silo
675
669
Reservoir
Junk Yard
Gas
655
28
29
33
8-5
BISMARK ROAD
Abingdon
REGIONAL ROAD 65
WOLF CREEK
CAISTORVILLE ROAD
REGIONAL ROAD 2
VIII
IX
Dump
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 8-5. A residential area occurs within the site area boundaries. Niagara Region Road 2 crosses the east portion of the site area. A stream course crosses the eastern portion of the site area.

There is insufficient constraint-free area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a residential area and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and row crops or corn-wheat to the north; a wetland area and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east; a candidate area boundary to the south and a stream course; and a residential area to the west.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☒
5. agriculture ☐
6. social ☐
7. transportation ☒

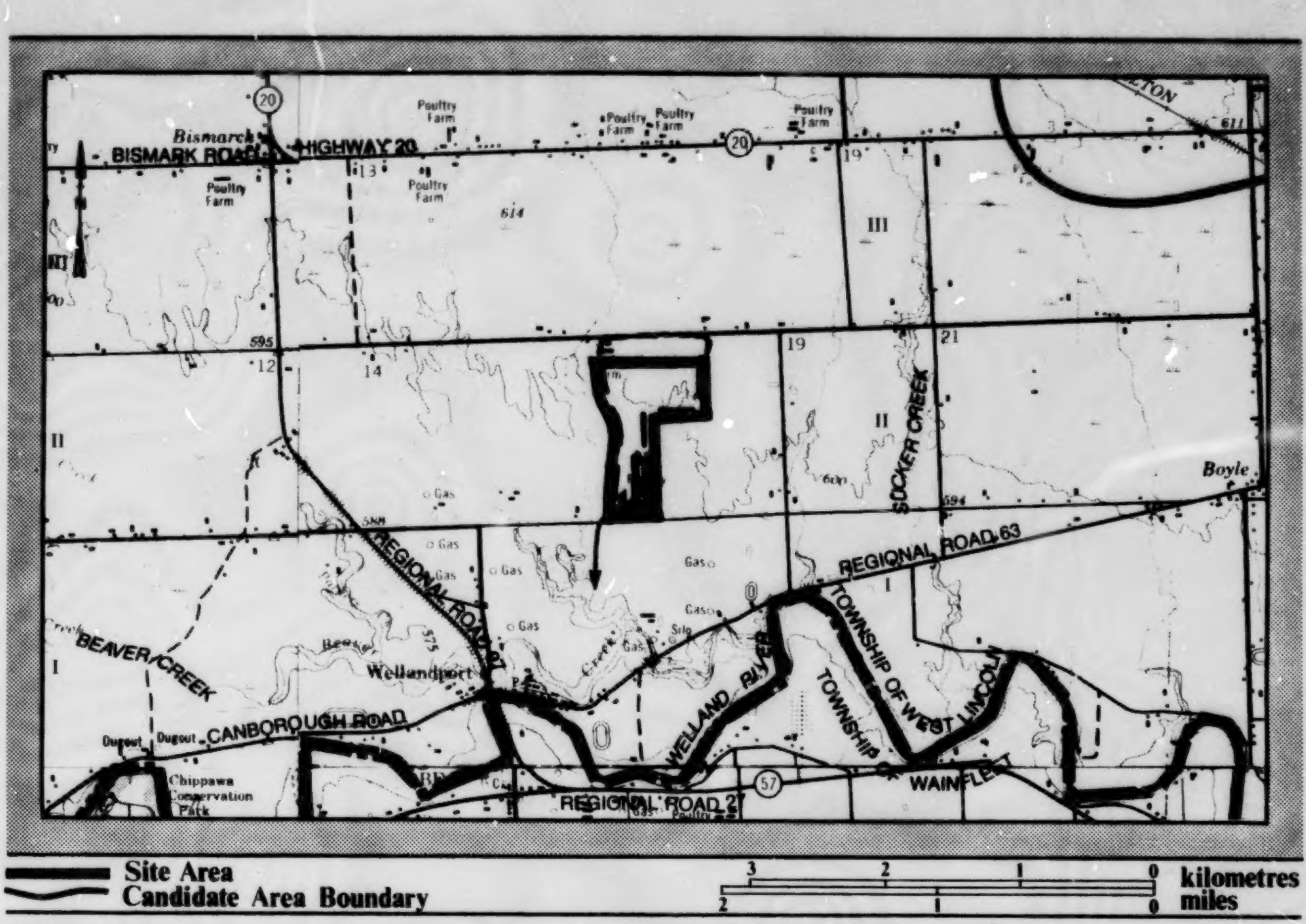
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-28C


Bismarck
BISMARK ROAD
HIGHWAY 20
20
Poultry Farm
614
595
12
13
14
19
21
III
II
I
SUCKER CREEK
Boyle
594
600
REGIONAL ROAD 63
REGIONAL ROAD 20
Gas
Silo
Wellandport
BEAVER CREEK
CANBOROUGH ROAD
Dugout
Chippawa Conservation Park
WELLAND RIVER
TOWNSHIP OF WEST LINCOLN
TOWNSHIP OF WAINFLEET
REGIONAL ROAD 27
57
575
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A stream course/floodplain crosses the south portion of the site area.

There is insufficient area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north; Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain and hay (good quality) to the east; a floodplain to the west; and Class 1 or 2 row crops or corn-wheat to the south.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

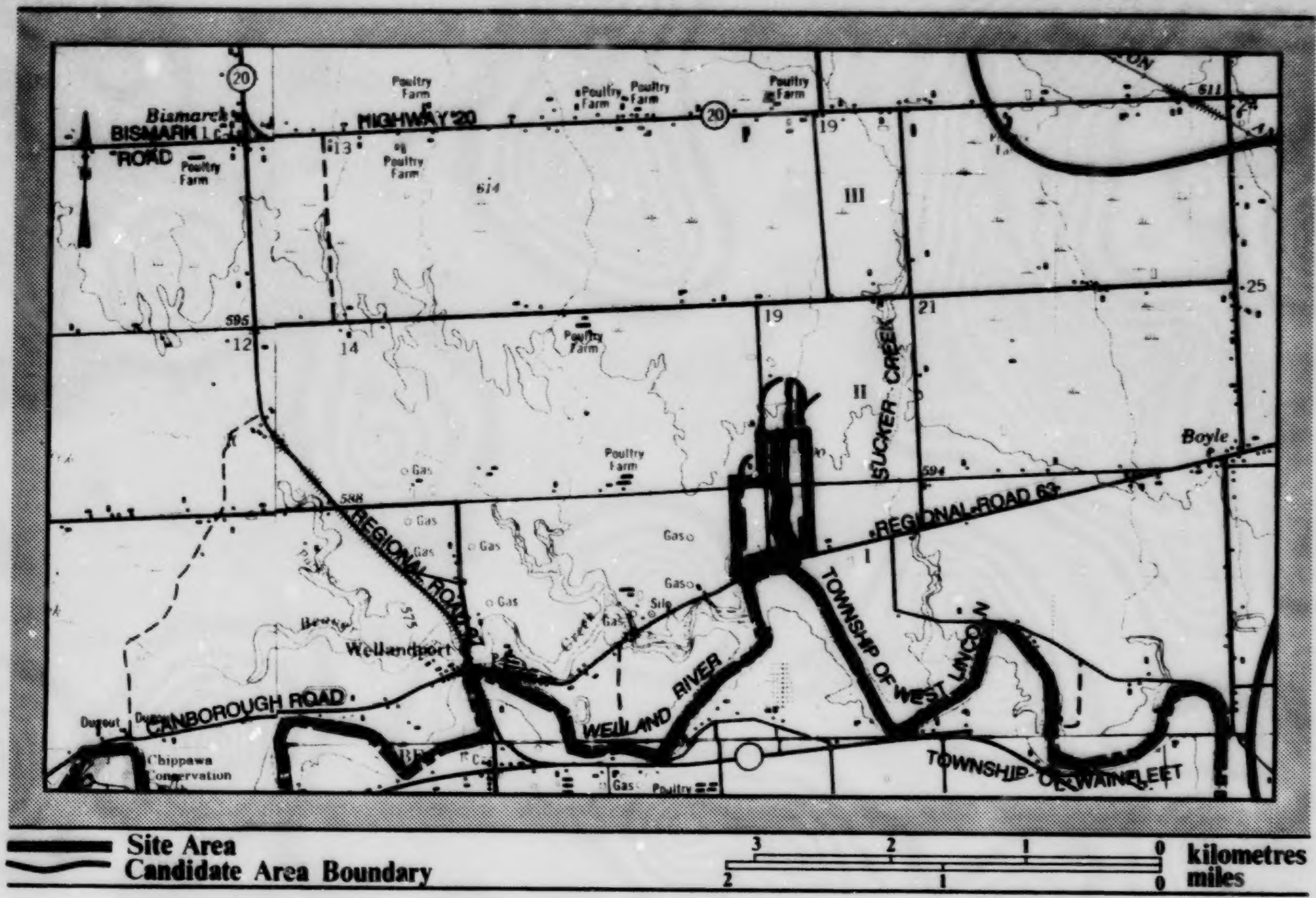
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-29C



Bismarck
BISMARK ROAD
HIGHWAY 20
20
Poultry Farm
614
13
19
III
II
I
25
595
12
14
21
SUCKER CREEK
Boyle
594
REGIONAL ROAD 63
588
REGIONAL ROAD
575
Gas
Silo
Wellandport
Beaver Creek
CANBOROUGH ROAD
Dugout
Chippawa Conservation
WELLAND RIVER
TOWNSHIP OF WEST LINCOLN
TOWNSHIP OF WAINFLEET
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
miles

Site Constraints:

A stream course/floodplain bisects the site area.

There is insufficient unconstrained area remaining in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of site area boundaries is restricted to the north by Class 1 or 2 and 3 row crops or corn-wheat; to the east and west by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality); and to the south by a floodplain and Niagara Region Road 63.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

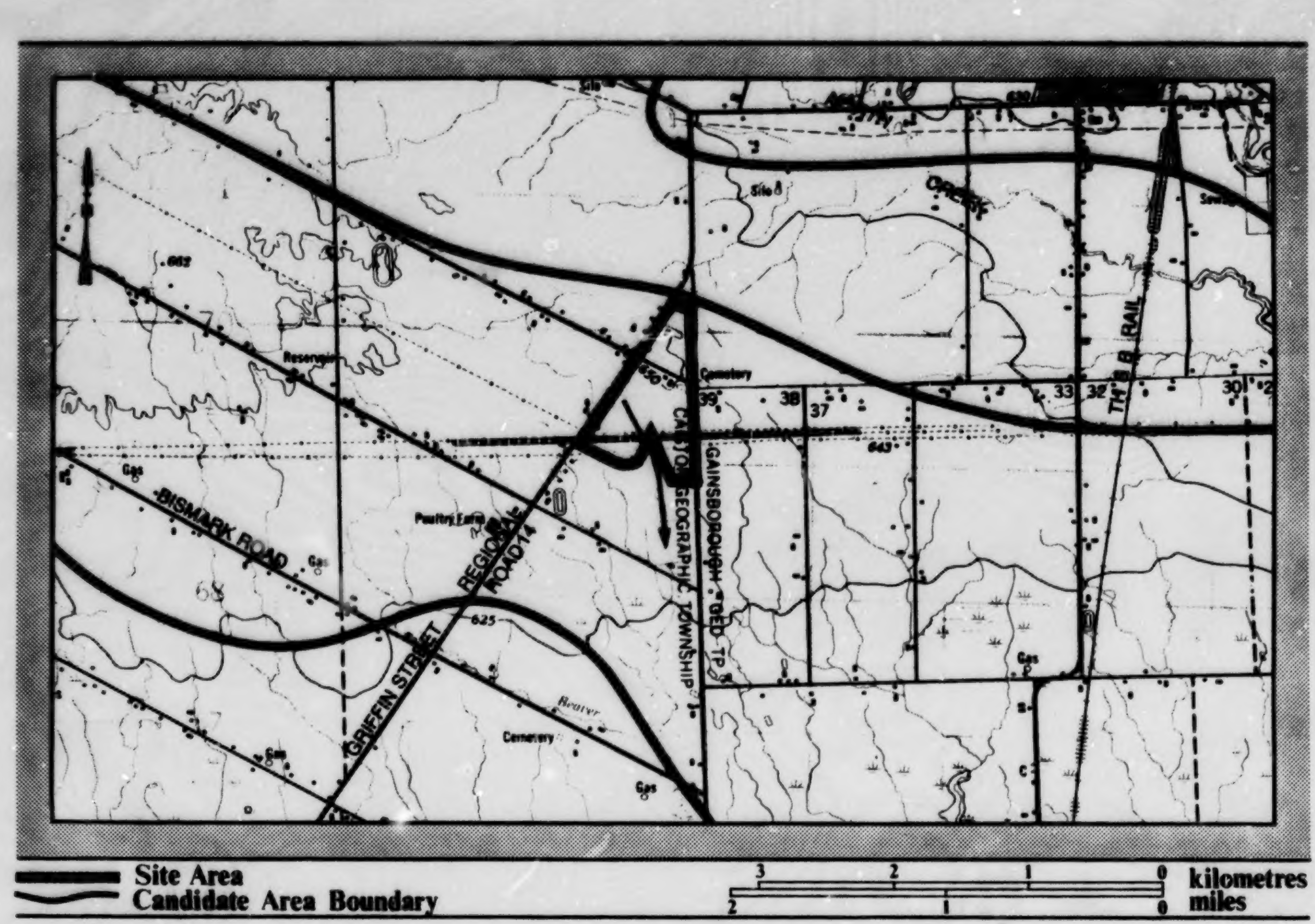
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-30C


BISMARK ROAD
REGIONAL ROAD 14
GRIFFIN STREET
GAINSBOROUGH GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO TP
CAISTOR
TH & B RAIL
CREEK
Reservoir
Poultry Farm
Cemetery
Cemetery
Gas
Beaver
Site
625
643
650
39
38
37
33
32
30
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The south portion of the site area is crossed by Ontario Hydro transmission lines. A stream course occurs in the south portion of the site area.

There is insufficient area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east, south and northwest; by Niagara Region Road 14 to the northwest; and a stream course to the southeast.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

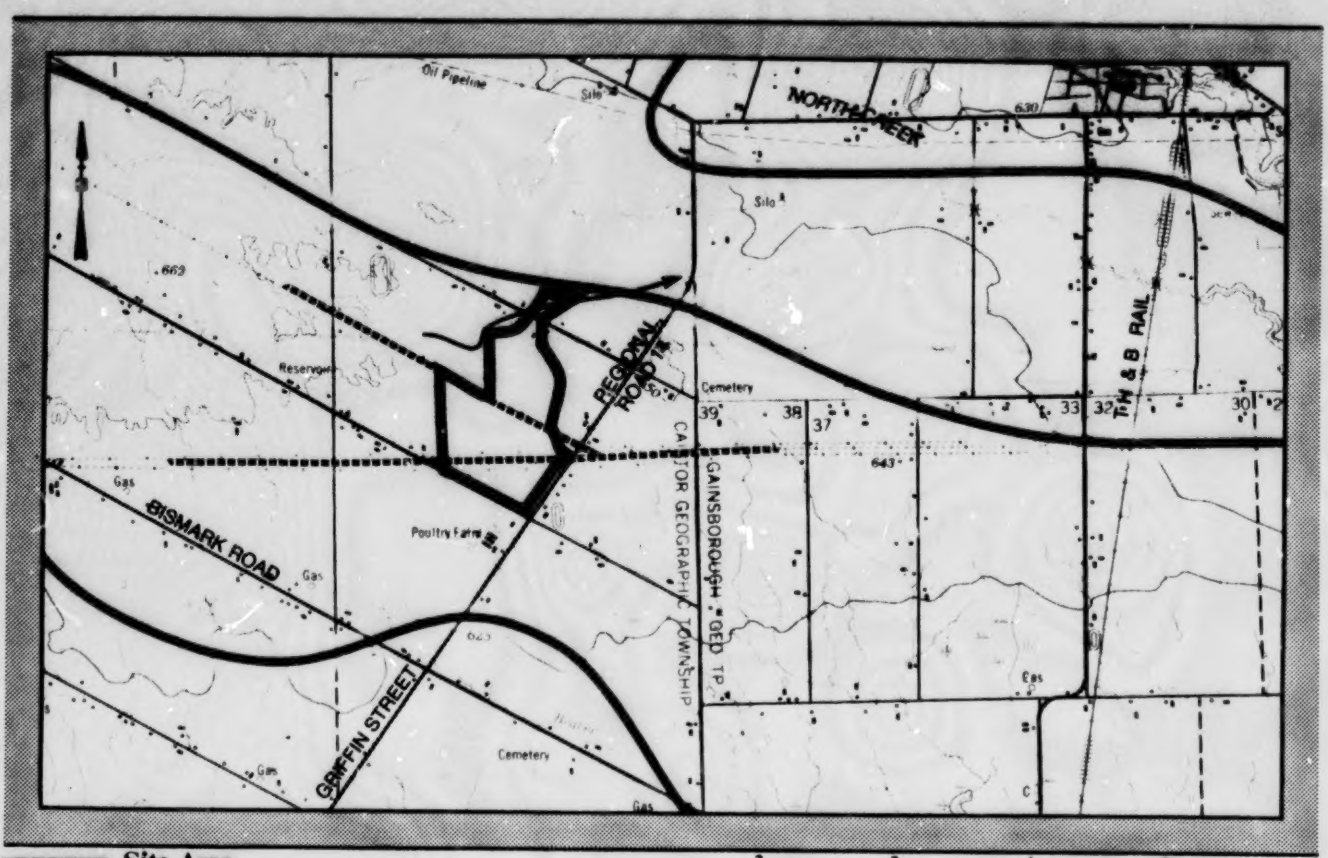
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-31C


Oil Pipeline
Silo
NORTH CREEK
630
Silo
.662
Reservoir
REGIONAL ROAD 14
Cemetery
39
38
37
33
32
30
TH & B RAIL
643
CAISTOR GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO TP.
Gas
BISMARK ROAD
Poultry Farm
Gas
623
GRIFFIN STREET
Cemetery
Gas
Gas
Gas

Site Area
Candidate Area Boundary

3 2 1 0 **kilometres**
2 1 0 **miles**

Site Constraints:

Ontario Hydro transmission lines cross the north and south portions of the site area. A stream course occurs in the north portion of the site area.

There is insufficient area in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion is restricted by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the northeast, east and south; Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the west; and a stream course to the north.

Suitability Screen

1. size ●
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

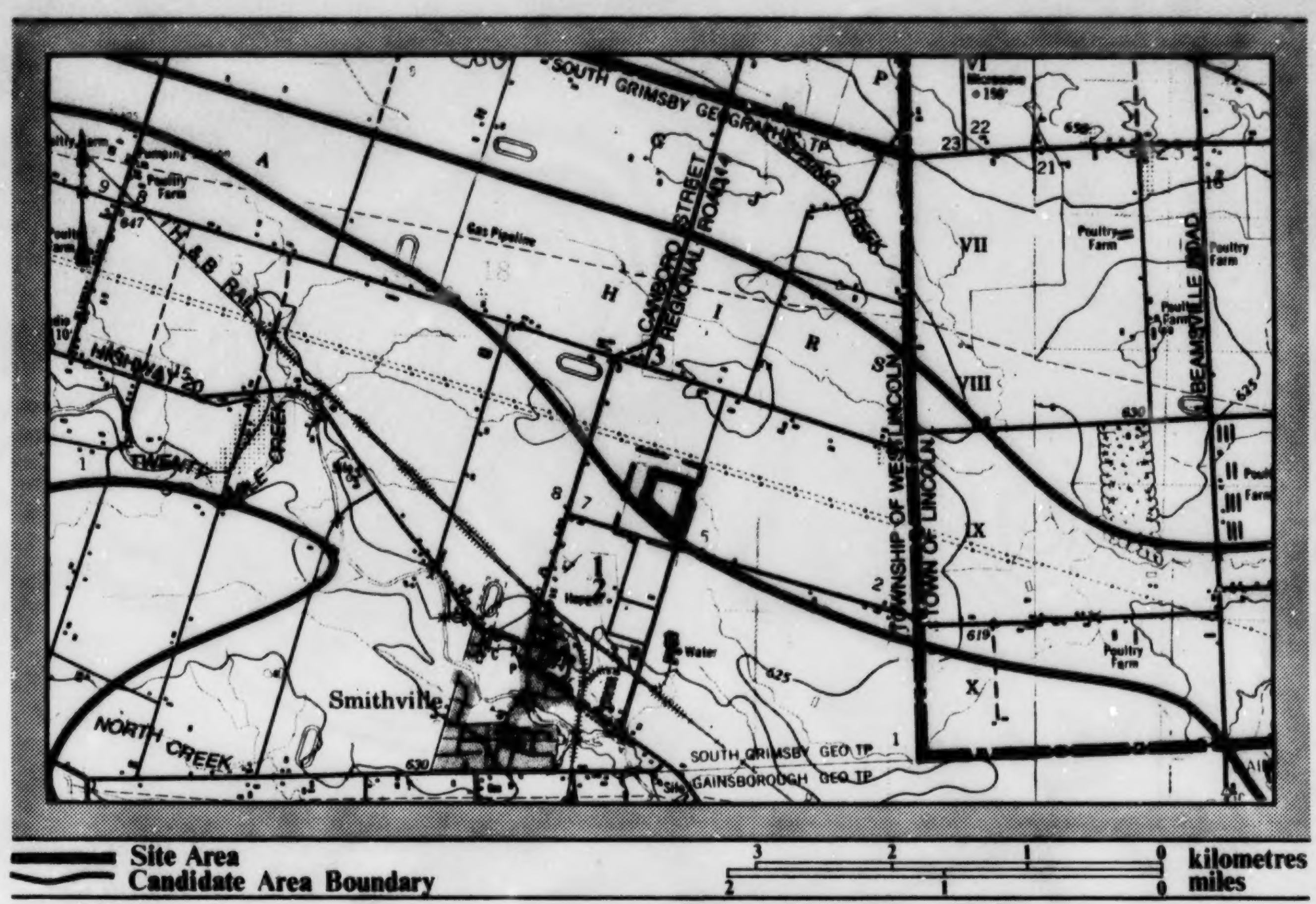
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-32C


SOUTH GRIMSBY GEOGRAPHIC TP
GAINSBOROUGH GEO TP
SOUTH GRIMSBY GEO TP
TOWNSHIP OF WEST LINCOLN
TOWN OF LINCOLN
CANBORO STREET
REGIONAL ROAD 14
BEAMSVILLE ROAD
HIGHWAY 20
TWENTY MILE CREEK
NORTH CREEK
T H & B RAIL
Gas Pipeline
Smithville
Poultry Farm
Water
VI
VII
VIII
IX
X
1
2
3
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is constrained by a residential area (Smithville) and by John Calvin School of Smithville (1) located adjacent to the site area. The Canadian Reformed Church of Smithville (2) and the Niagara Public Works Dept. - Smithville Yard (3) are also located adjacent to the site area.

The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north, west and east; Ontario Hydro transmission lines to the north; a candidate area boundary to the south; and a residential area to the southwest.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☐
4. land use ●
5. agriculture ☐
6. social ●
7. transportation ☐

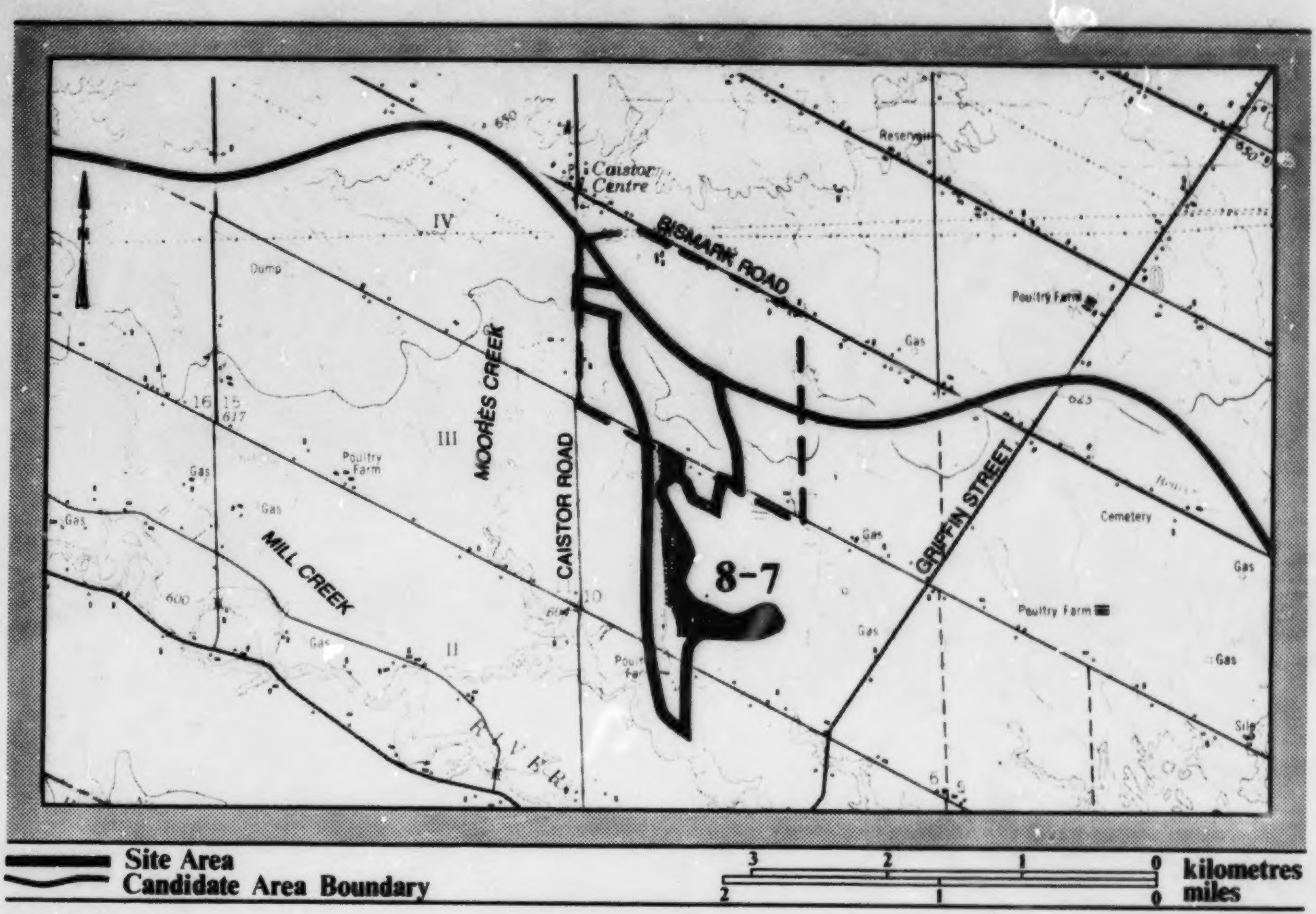
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-1C


Caistor Centre
Reservoir
IV
Dump
III
II
BISMARK ROAD
MOORES CREEK
CAISTOR ROAD
GRIFFIN STREET
MILL CREEK
RIVER
Poultry Farm
Poultry Farm
Poultry Farm
Gas
Cemetery
650
625
600
617
16
15
10
6
5
8-7
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

SEU 8-7 conflicts with the south portion of the site area. A residential area (Caistor Centre) is adjacent to the northwest.

The north portion of the site area is irregularly shaped and is not large enough to accommodate a combined physical/chemical treatment plant or incinerator facility.

Consideration was given to locating the operating area of the facility within the unconstrained area. However, a large portion of the technical buffer area would fall outside the site area boundaries. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north; a residential area (Caistor Centre) to the northwest; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a wetland area to the east; a floodplain and Class 1 or 2 row crops or corn-wheat to the south; and a stream course and Class 1 or 2 and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☒
5. agriculture ☐
6. social ☐
7. transportation ☐

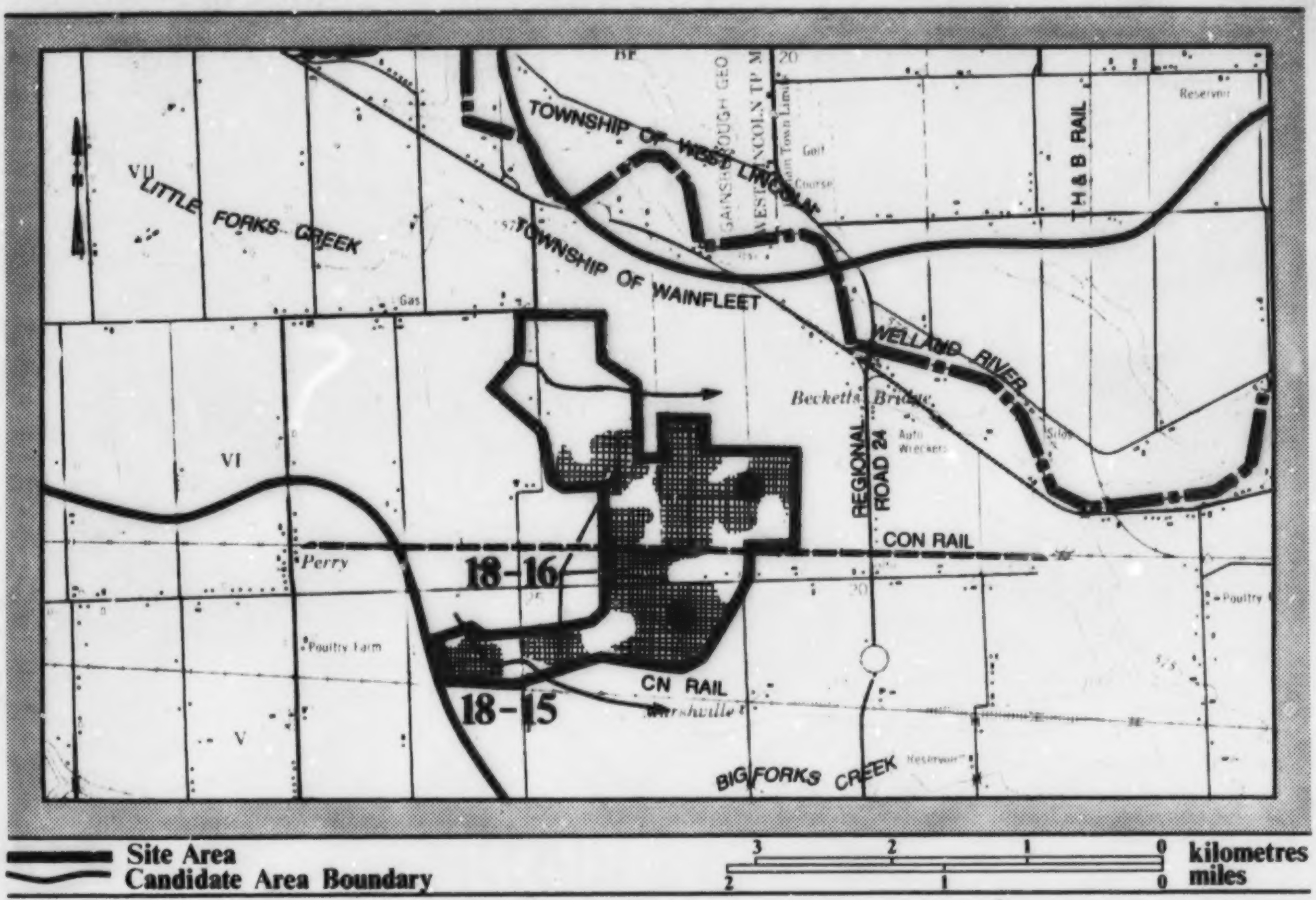
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-2C


TOWNSHIP OF WEST LINCOLN
TOWNSHIP OF WAINFLEET
LITTLE FORKS CREEK
VII
VI
V
Gas
Golf Course
TH & B RAIL
Reservoir
WELLAND RIVER
Becketts Bridge
Auto Wreckers
REGIONAL ROAD 24
CON RAIL
Perry
18-16
18-15
Poultry Farm
Poultry
CN RAIL
Marshville
BIG FORKS CREEK
Reservoir
20
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEUs 18-15 and 18-16. Two stream courses and a Conrail Railways rail line cross the site area.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility in the unconstrained portion of the site area. However, a majority of the technical buffer area extended into constrained area. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of site area boundaries is restricted by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and row crops or corn-wheat to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a residential area to the east; Class 1 or 2 row crops or corn-wheat and a Canadian National Railway line to the south; and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the west.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

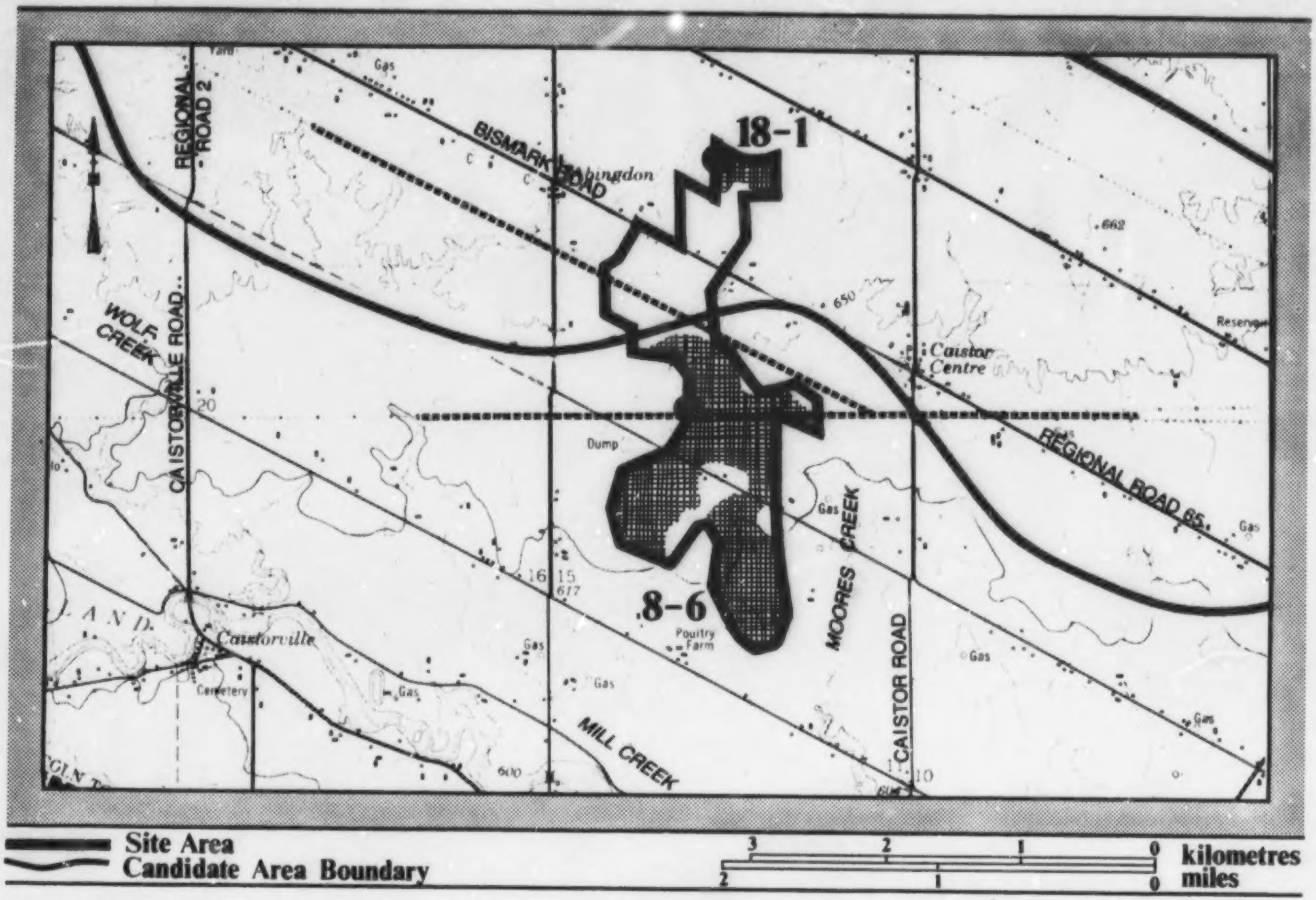
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-3C


REGIONAL ROAD 2
Yard
Gas
BISMARK ROAD
Abingdon
18-1
.662
650
Caistor Centre
Reservoir
WOLF CREEK
CAISTORVILLE ROAD
20
Dump
REGIONAL ROAD 65
Gas
MOORES CREEK
16
15
617
8-6
Poultry Farm
Caistorville
Cemetery
Gas
MILL CREEK
600
CAISTOR ROAD
10
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEUs 8-6 and 18-1. It is crossed by two Ontario Hydro transmission lines and by Niagara Region Road 65.

The remaining unconstrained area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility within the constraint-free area. However, the technical buffer area extended across major transportation facilities or into constrained area. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Site area expansion is constrained by a wetland area and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and Class 3 or 4 row crops or corn-wheat to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and pasture grazing or hay (poor quality) to the east; Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the south; Class

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

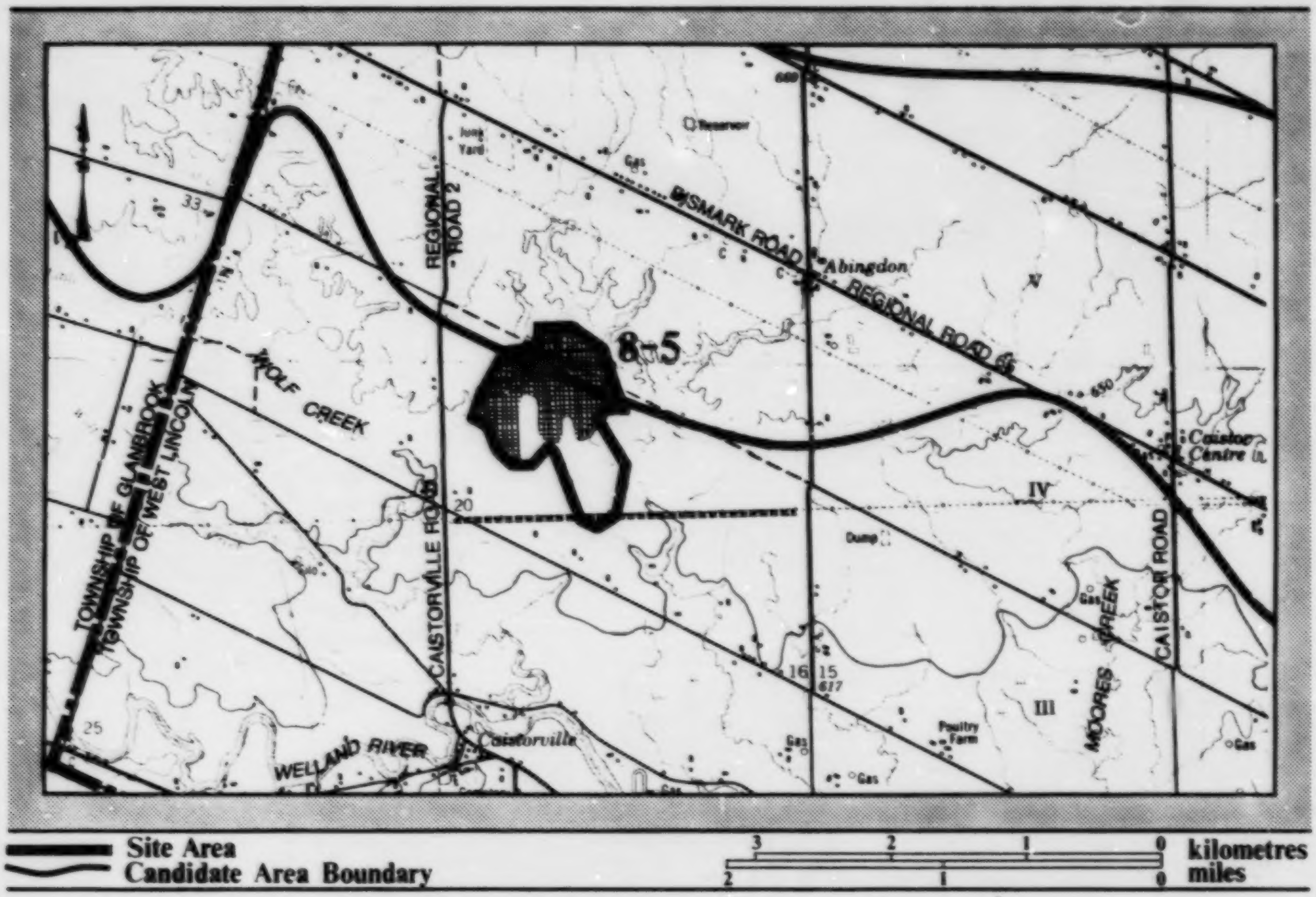
10. travel distance ☐
11. access routes ☐

PI-4C

Adjacent Constraints:

Continued

1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the west; and residential areas to the northeast (Caistor Centre) and northwest (Abingdon).


8-5
BISMARK ROAD
Abingdon
REGIONAL ROAD 65
REGIONAL ROAD 2
CAISTORVILLE ROAD
CAISTOR ROAD
WOLF CREEK
MOORES CREEK
WELLAND RIVER
Caistorville
Caistor Centre
TOWNSHIP OF GLANBROOK
TOWNSHIP OF WEST LINCOLN
Junk Yard
Reservoir
Dump
Poultry Farm
Gas
IV
III
33
20
25
16
15
617
650
660
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 8-5. An Ontario Hydro transmission line crosses the extreme southern portion of the site area.

There is insufficient unconstrained area in which to locate a combined physical/treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility in the unconstrained area. However, a large portion of the technical buffer extended into constrained area. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Site area expansion is constrained by Class 1 or 2 row crops or corn-wheat to the north; a wetland area to the northwest; a stream course to the east; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the west; and Class 1 or 2 grazing, pasture or hay (poor quality) and mixed, cereal grain, hay-grain or hay (good quality) to the south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

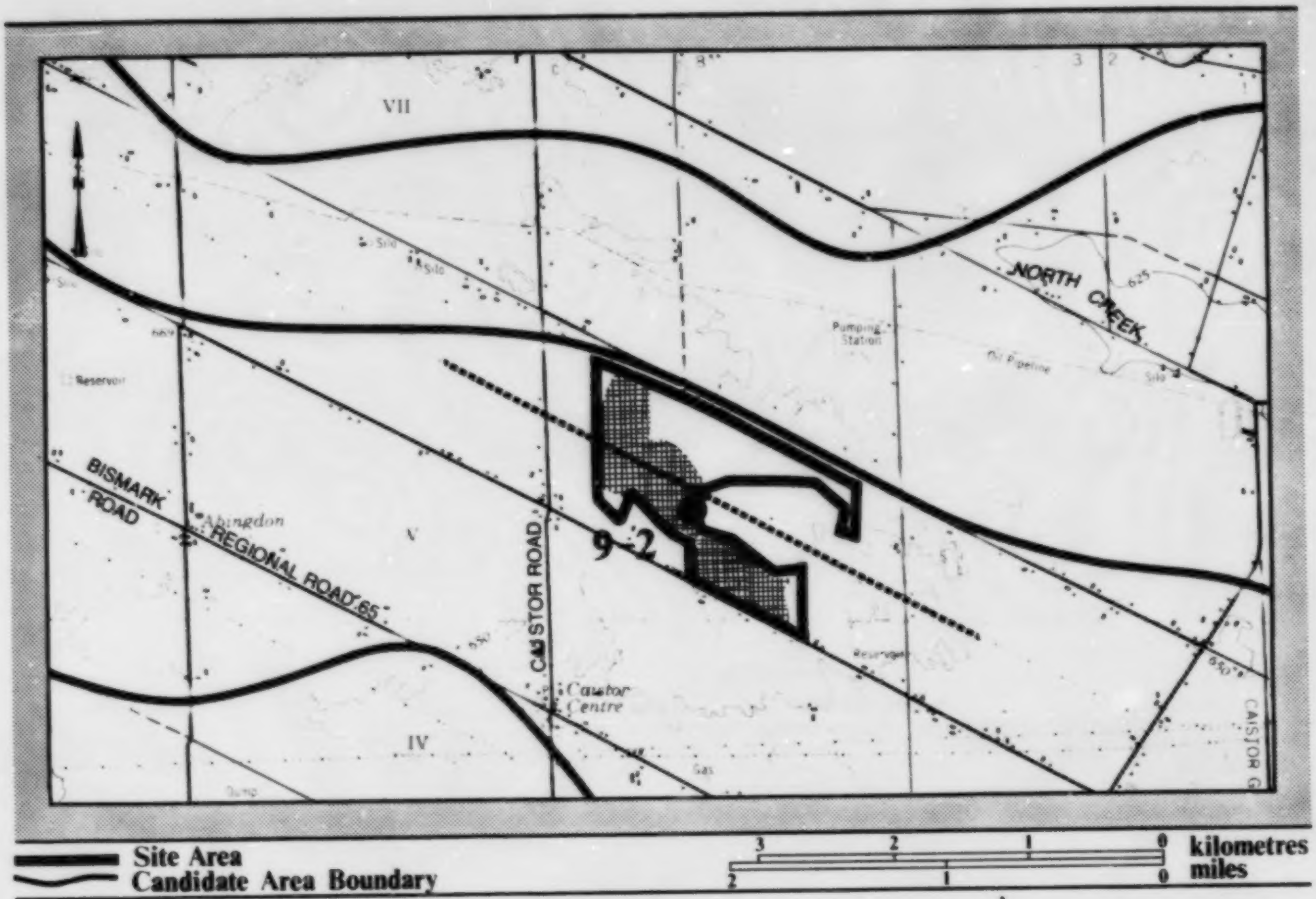
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-5C



VII
V
IV
9-2
NORTH CREEK
BISMARK ROAD
REGIONAL ROAD 65
CAISTOR ROAD
Abingdon
Caistor Centre
Pumping Station
Oil Pipeline
Reservoir
Silo
Gas
CAISTOR G
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 9-2 and is crossed by an Ontario Hydro transmission line.

The remaining area is irregularly shaped and is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility in the unconstrained area. However, a majority of the technical buffer would extend into constrained area. The site area was dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained to the north, east and west by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a wetland area to the south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

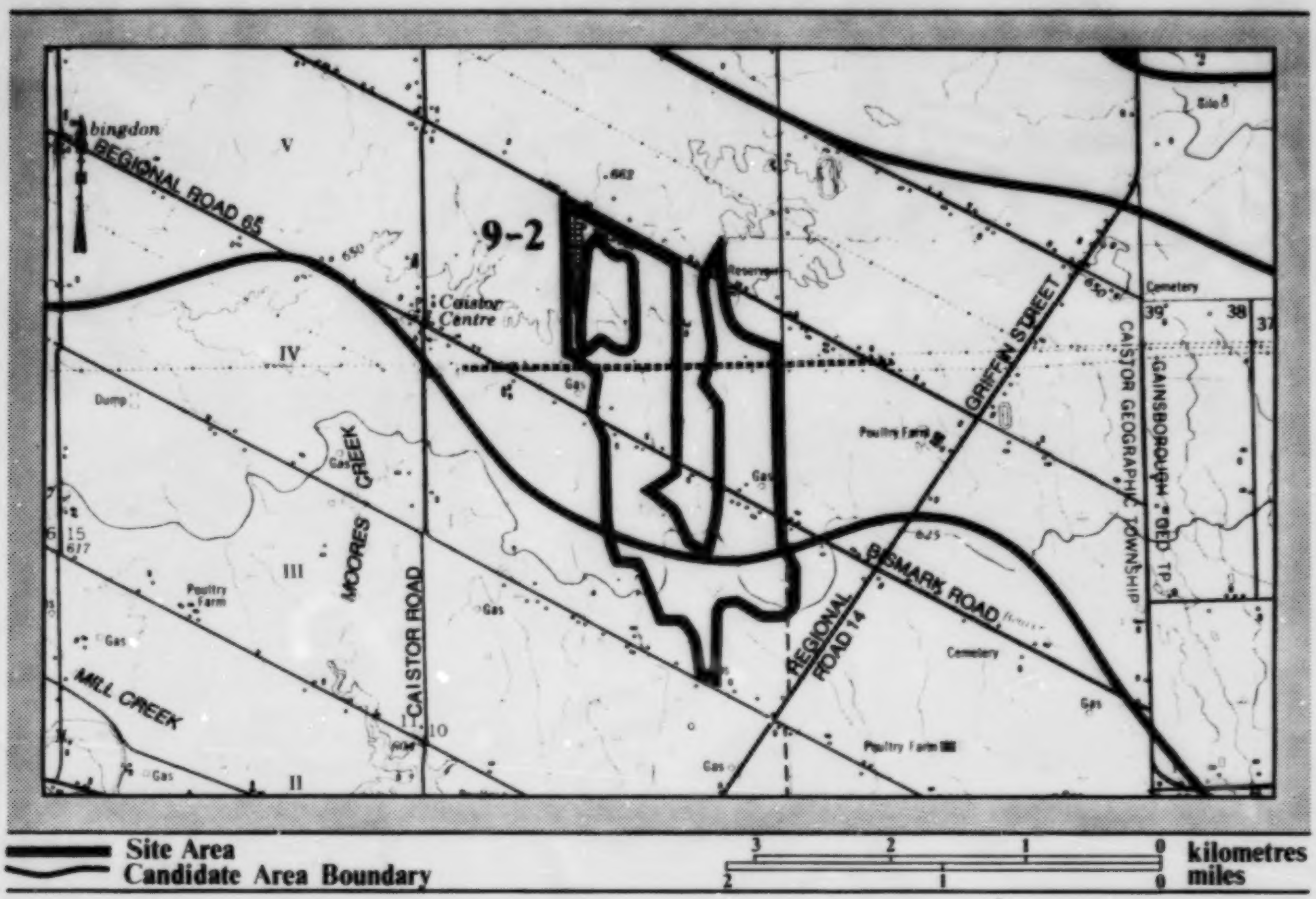
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-6C


Abingdon
REGIONAL ROAD 65
V
9-2
Caistor Centre
IV
III
II
Dump
MOORES CREEK
CAISTOR ROAD
MILL CREEK
Poultry Farm
Gas
GRIFFIN STREET
REGIONAL ROAD 14
BISMARK ROAD
CAISTOR GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO TP
Cemetery
Reservoir
39
38
37
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

SEU 9-2 occurs in the northern portion of the site area. Niagara Region Road 65 crosses the south portion of the site area and an Ontario Hydro transmission line crosses the north portion of the site area.

The remaining area is irregularly shaped and is not of sufficient size to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operations area of the facility in the unconstrained area. However, a majority of the technical buffer area would extend into constrained area or across major transportation facilities.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

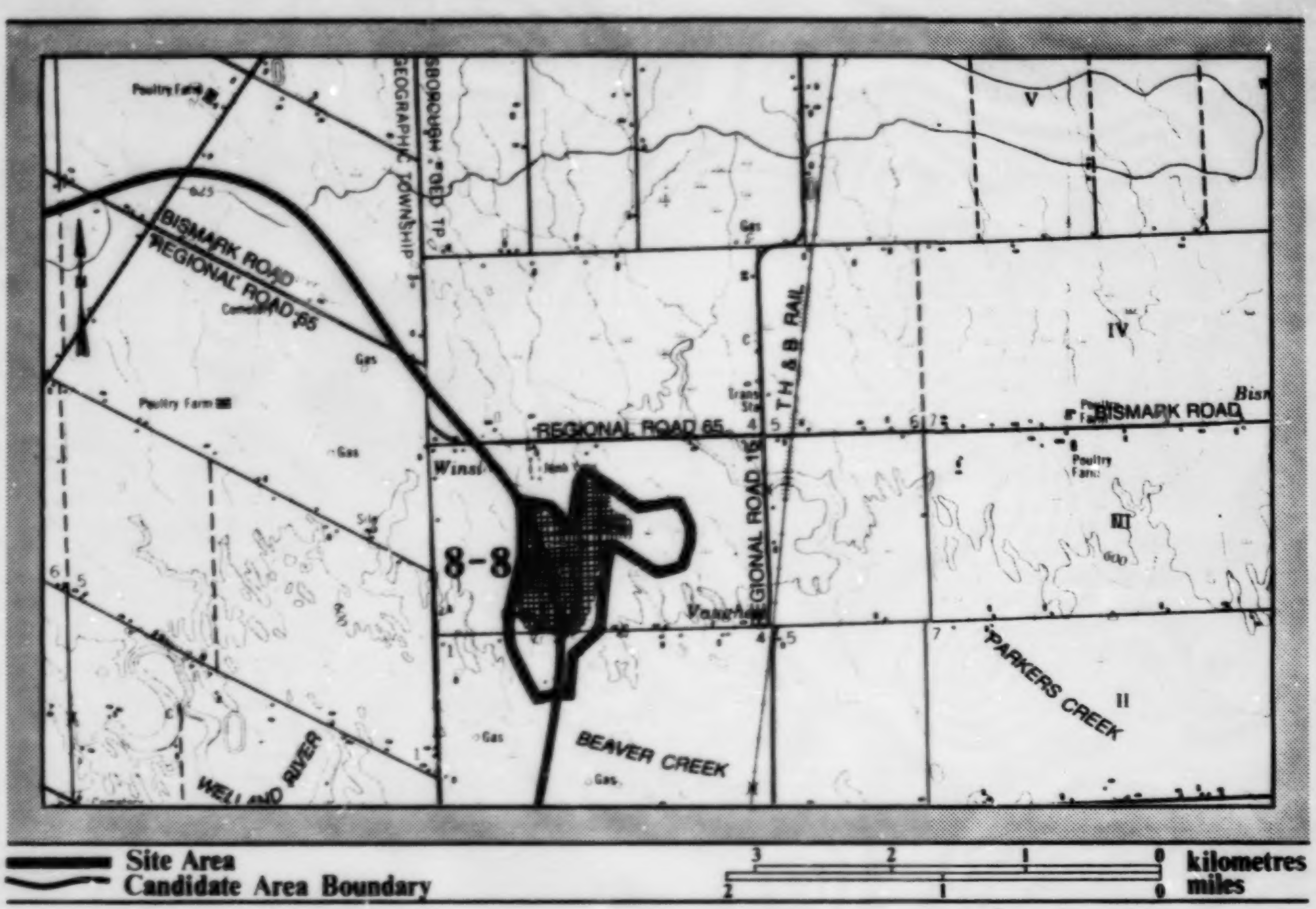
System Screen

10. travel distance ☐
11. access routes ☐

PI-7C

Adjacent Constraints:

Expansion is restricted by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a wetland to the north; Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the west; Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the southwest; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the southeast; and Class 1 or 2 pasture, grazing or hay (poor quality) to the east.


Poultry Farm
GEOGRAPHIC TOWNSHIP
SBOROUGH OLD TP.
BISMARK ROAD
REGIONAL ROAD 65
Gas
Poultry Farm
V
IV
III
II
T H & B RAIL
REGIONAL ROAD 65
BISMARK ROAD
Poultry Farm
Winsl
8-8
REGIONAL ROAD 19
Vaughan
PARKERS CREEK
BEAVER CREEK
WELLAND RIVER
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 8-8.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility in the unconstrained area. However, a large portion of the technical buffer area extended into constrained area. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion is constrained by Class 1 or 2 row crops or corn-wheat to the north and southwest; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a residential area (Winslow) to the northwest; a floodplain to the south; and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

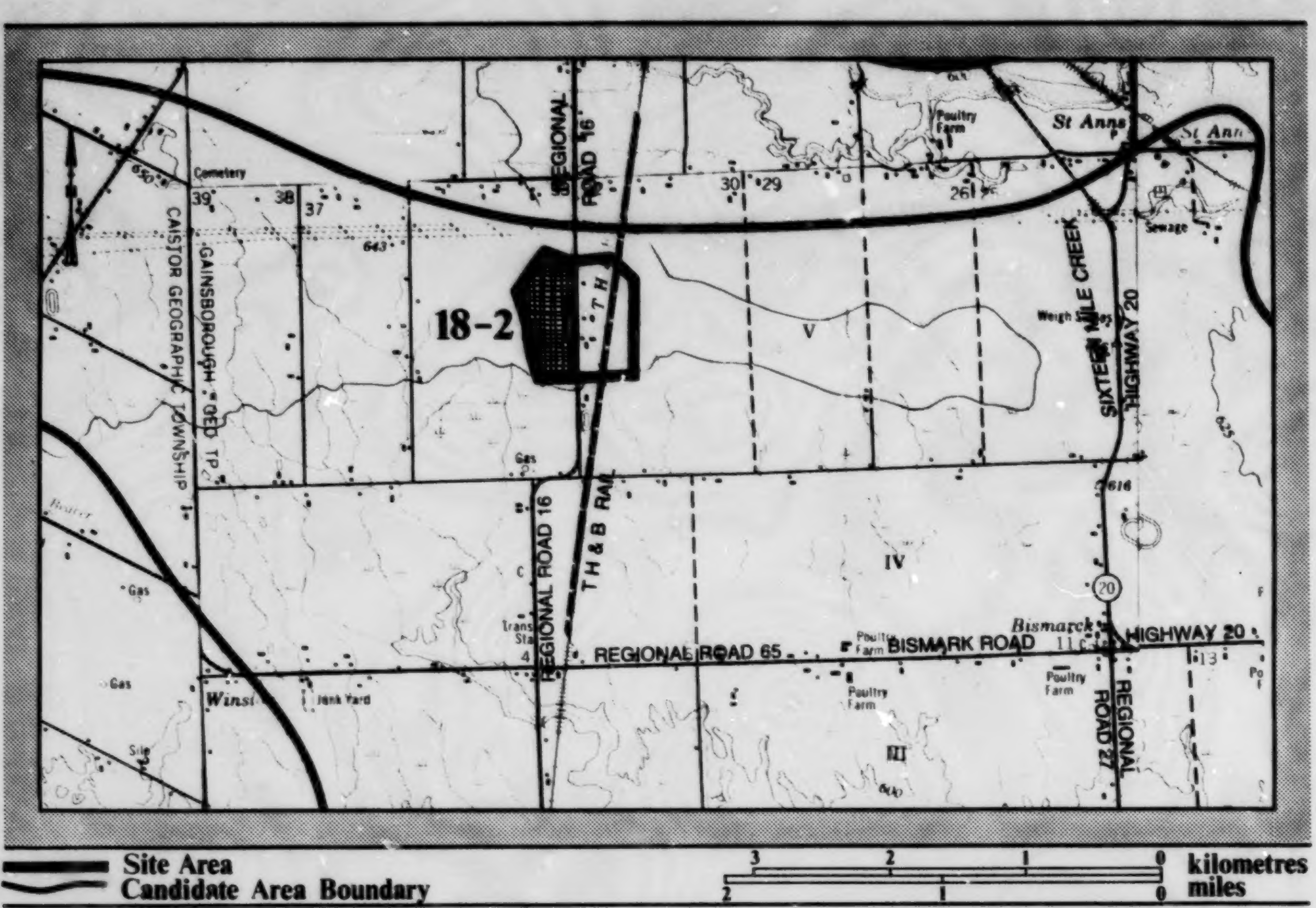
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-8C


18-2
REGIONAL ROAD 16
TH&B RAIL
TH
CAISTOR GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO TP
Cemetery
39
38
37
30
29
26
643
650
St Anns
Poultry Farm
Sewage
Weigh Scales
SIXTEEN MILE CREEK
HIGHWAY 20
V
IV
III
Gas
Trans Sta
616
20
Bismarck
HIGHWAY 20
BISMARK ROAD
REGIONAL ROAD 65
REGIONAL ROAD 27
Junk Yard
Winston
Beaver
13
600
625
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-2. In addition Niagara Region Road 16 and a Toronto, Hamilton and Buffalo Railways rail line cross the site area.

There is insufficient constraint-free area remaining in which to locate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Expansion of the site area is constrained by Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a wetland area to the west; to the south by Class 1 or 2 pasture, grazing or hay (poor quality) and mixed cereal, grain, hay-grain or hay (good quality);

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

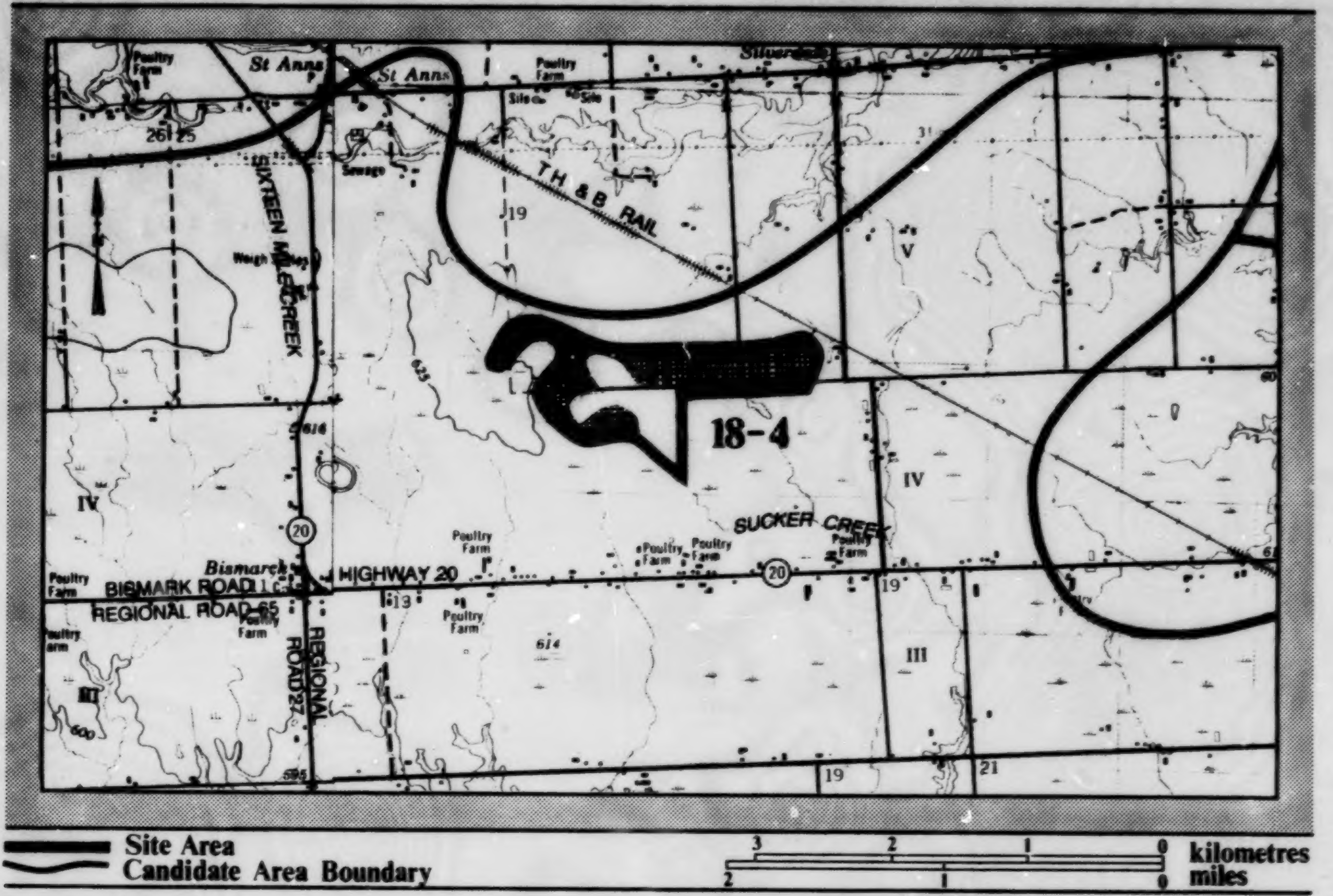
10. travel distance ☐
11. access routes ☐

PI-9C

Adjacent Constraints:

Continued

and to the east by Class 1 or 2 pasture, grazing or hay (poor quality) and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality).


St Anns
St Anns
Silverdale
Poultry Farm
Site
26
25
SIXTEEN MILE CREEK
Sewage
Weigh Scale
TH & B RAIL
19
31
V
635
18-4
616
IV
IV
20
SUCKER CREEK
Poultry Farm
Bismarck
BISMARK ROAD
REGIONAL ROAD 65
HIGHWAY 20
13
REGIONAL ROAD 27
614
III
III
600
595
19
19
21
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-4.

The remaining area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Site area expansion is restricted by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north; Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the east; a wetland area to the southwest; and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

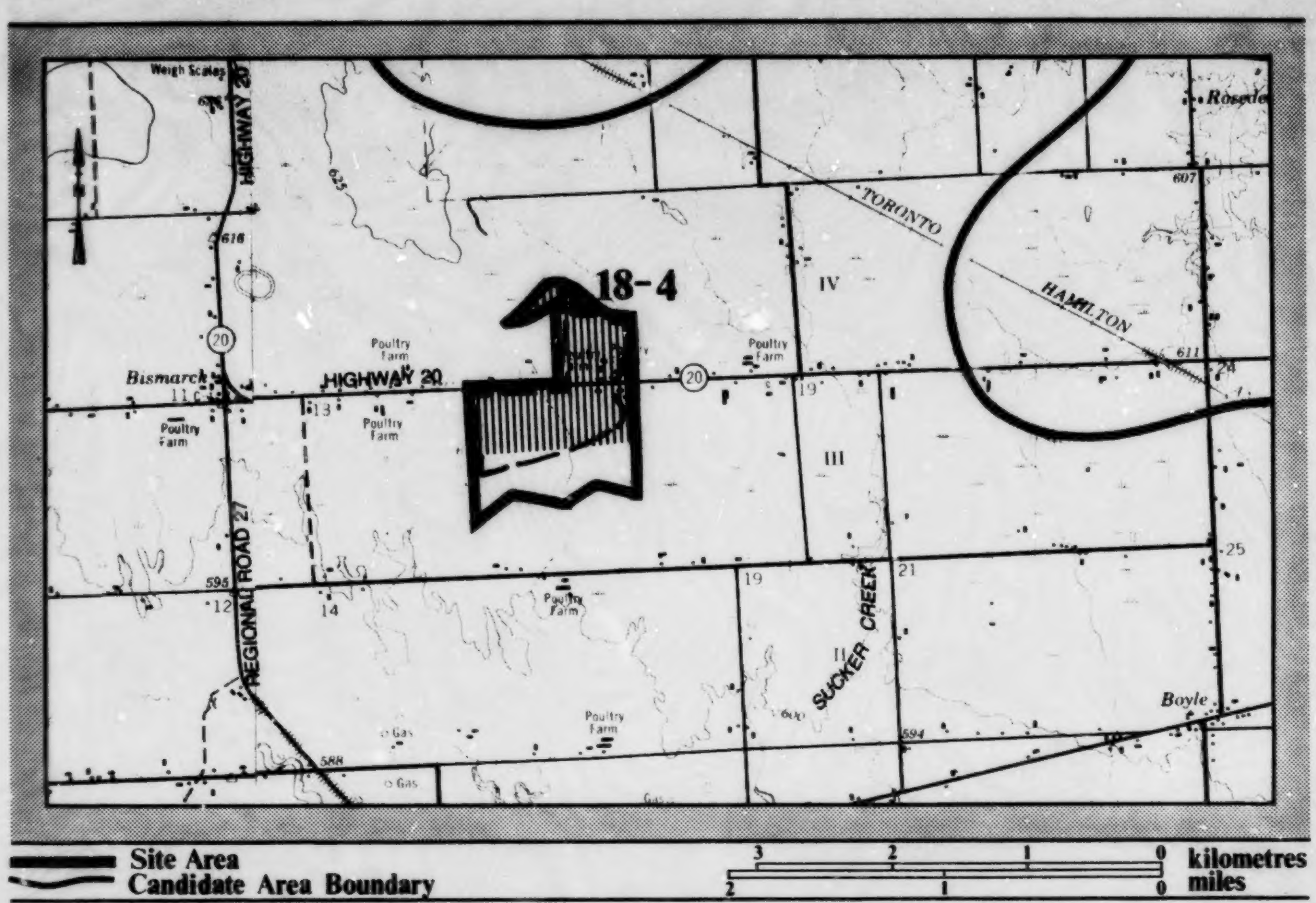
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-10C


Weigh Scales
HIGHWAY 20
625
616
607
Rosedale
TORONTO
HAMILTON
18-4
IV
Poultry Farm
Poultry Farm
20
Bismarck
11
HIGHWAY 20
20
19
611
24
13
Poultry Farm
Poultry Farm
III
REGIONAL ROAD 27
595
12
14
Poultry Farm
19
SUCKER CREEK
21
25
II
600
Poultry Farm
Gas
Gas
Gas
588
594
Boyle
7
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is constrained by a residential area within the boundaries. In addition Provincial Highway 20 crosses the site area. SEU 18-4 occurs in the north portion of the site area.

The remaining constraint-free area is irregularly shaped and is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operations area of the facility within the remaining constraint-free area. However, a large portion of the technical buffer extended into constrained area. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a wetland area to the north; a residential area and Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the east; Class 1 or 2 row crops, corn-wheat and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the south; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good

Suitability Screen

1. size ●
2. physical resources ☐
3. biology ●
4. land use ●
5. agriculture ☐
6. social ☐
7. transportation ●

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

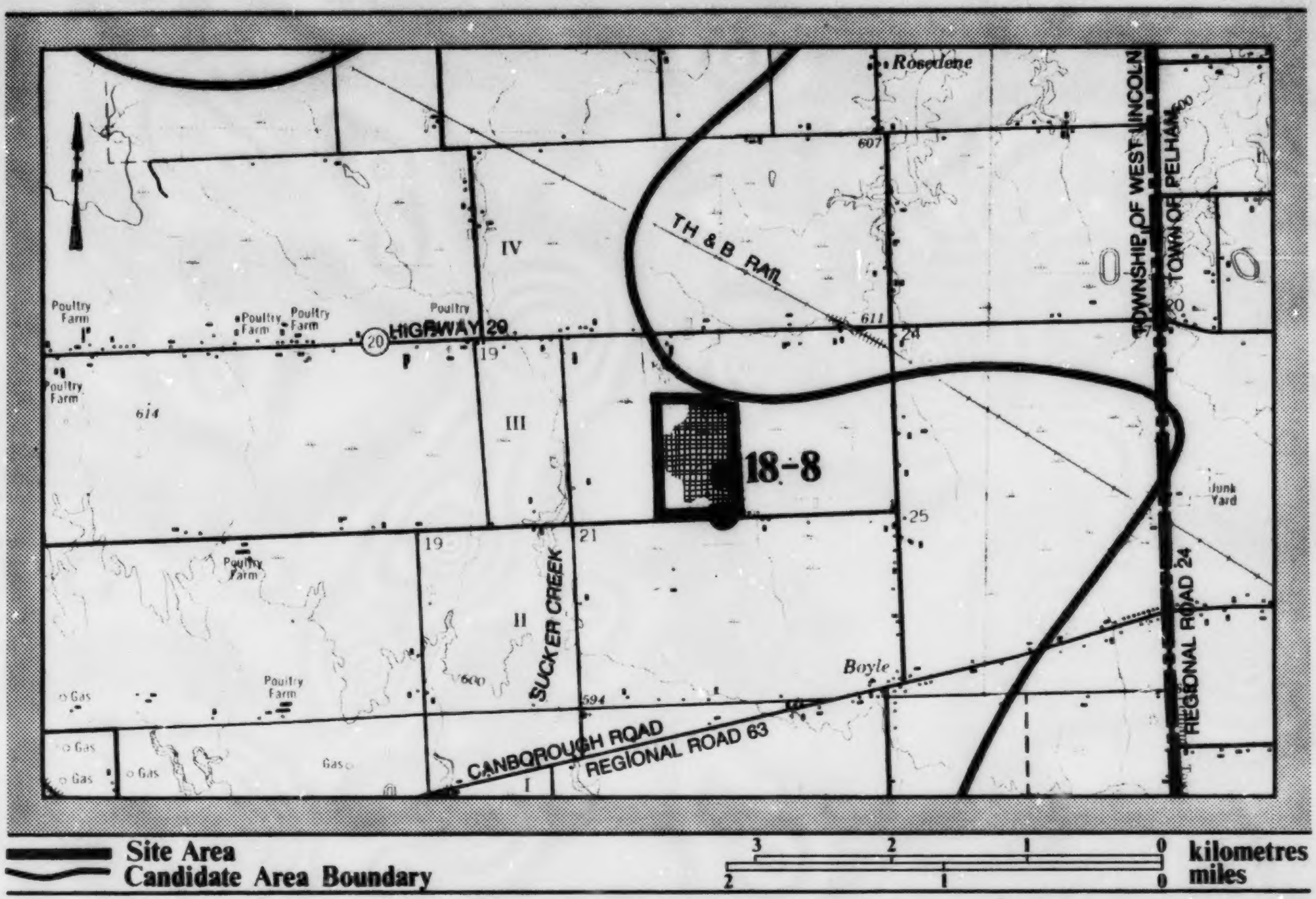
10. travel distance ☐
11. access routes ☐

PI-11C

Adjacent Constraints:

Continued

quality) and a residential area to the west; and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the northwest.



Rosedene
607
TOWNSHIP OF WEST LINCOLN
TOWN OF PELHAM
TH & B RAIL
IV
Poultry Farm
Poultry Farm
Poultry Farm
Poultry
20
HIGHWAY 20
19
611
24
Poultry Farm
614
III
18-8
25
Junk Yard
19
21
Poultry Farm
II
SUCKER CREEK
600
REGIONAL ROAD 24
Boyle
Gas
Poultry Farm
594
Gas
Gas
Gas
Gas
CANBOROUGH ROAD
REGIONAL ROAD 63
I
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-8.

The remaining area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Expansion is constrained by the candidate area boundary to the north; Class 1 or 2 pasture, grazing or hay (poor quality) and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the west and south; and Class 1 or 2 mixed, cereal grain or hay (good quality) to the east.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

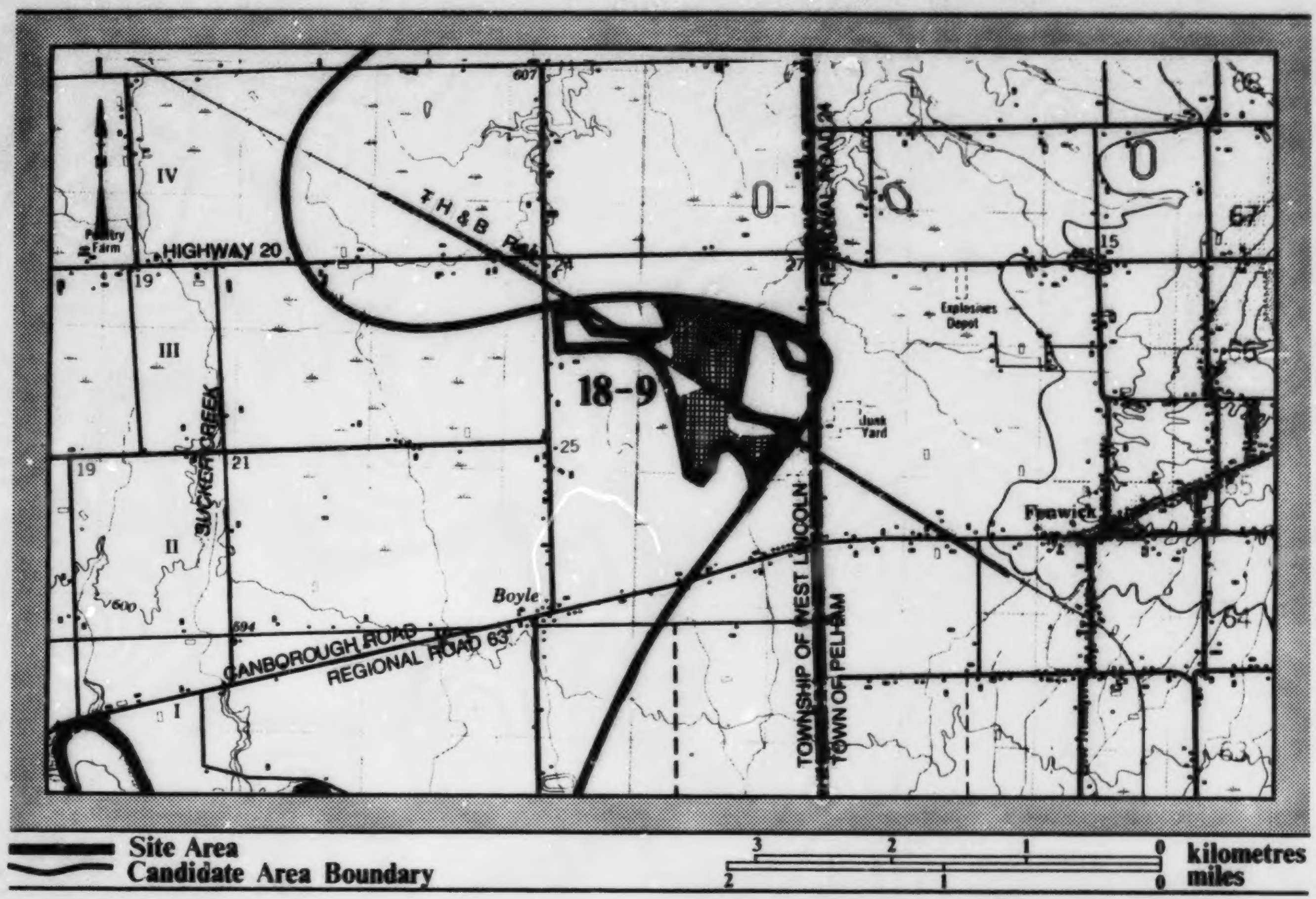
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-12C


HIGHWAY 20
T H & B Rail
REGIONAL ROAD 24
18-9
Explosives Depot
Junk Yard
Fenwick
Boyle
CANBOROUGH ROAD
REGIONAL ROAD 63
SUCKER CREEK
TOWNSHIP OF WEST LINCOLN
TOWN OF PELHAM
Poultry Farm
IV
III
II
I
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEU 18-9. It is crossed by a Toronto, Hamilton and Buffalo Rail Line.

The remaining area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

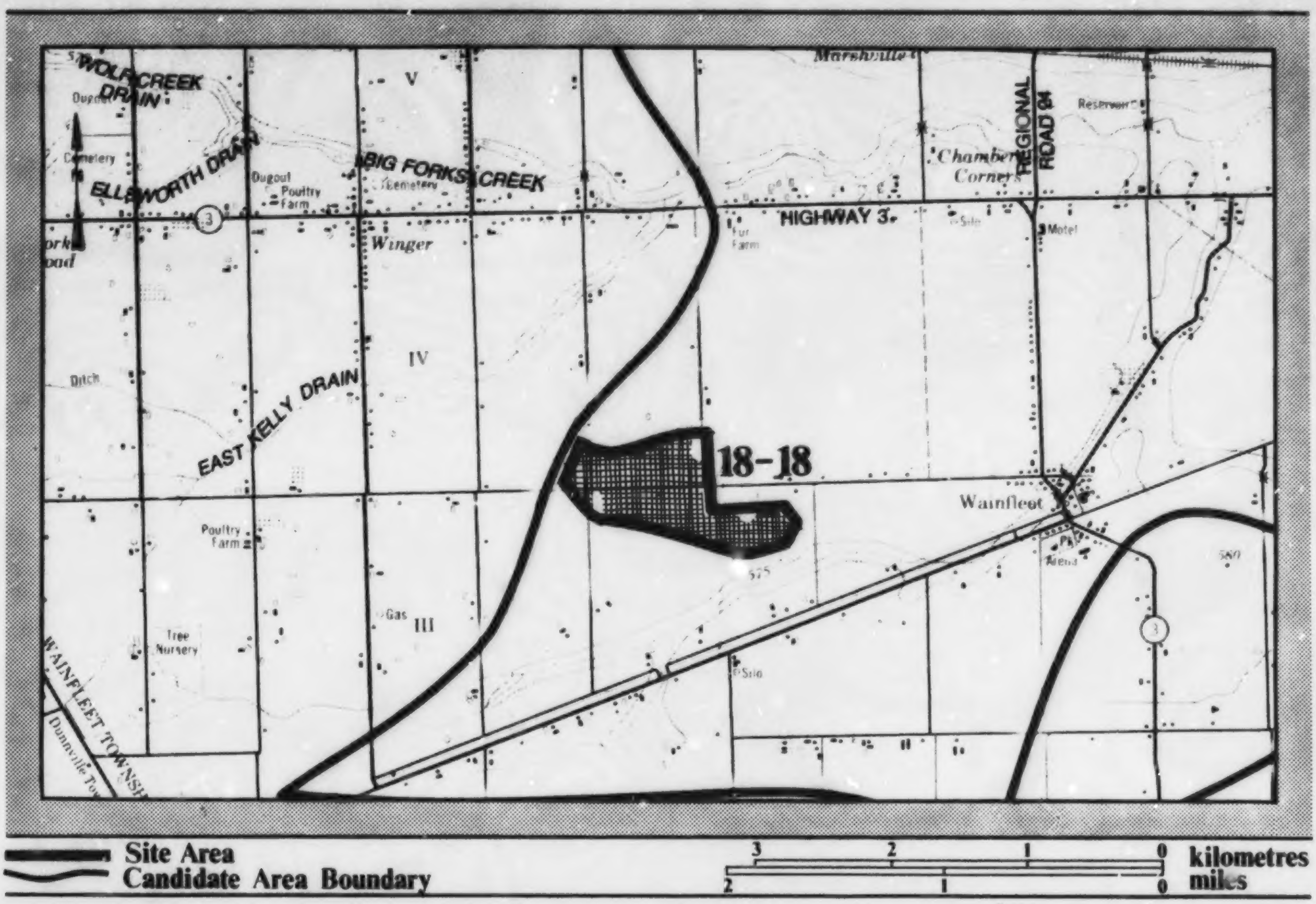
System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Expansion of site area boundaries is constrained by a candidate area boundary to the north and east; Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the east, west and south; and a residential area (Boyle) to the southeast.

PI-13C


WOLF CREEK DRAIN
Dupont
Cemetery
ELLSWORTH DRAIN
Dugout
Poultry Farm
BIG FORKS CREEK
Cemetery
V
Marshville
Chambers Corners
REGIONAL ROAD 84
Reservoir
HIGHWAY 3
3
Winger
Fur Farm
Silo
Motel
IV
Ditch
EAST KELLY DRAIN
18-18
Wainfleet
Poultry Farm
575
Park
Arena
580
Gas
III
Tree Nursery
3
Silo
WAINFLEET TOWNSHIP
Dunnville Town
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-18.

There is insufficient area remaining in which to locate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Site area boundary expansion is restricted by a candidate area boundary to the west; Class 1 or 2 row crops or corn-wheat to the north; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and row crops or corn-wheat to the south; and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

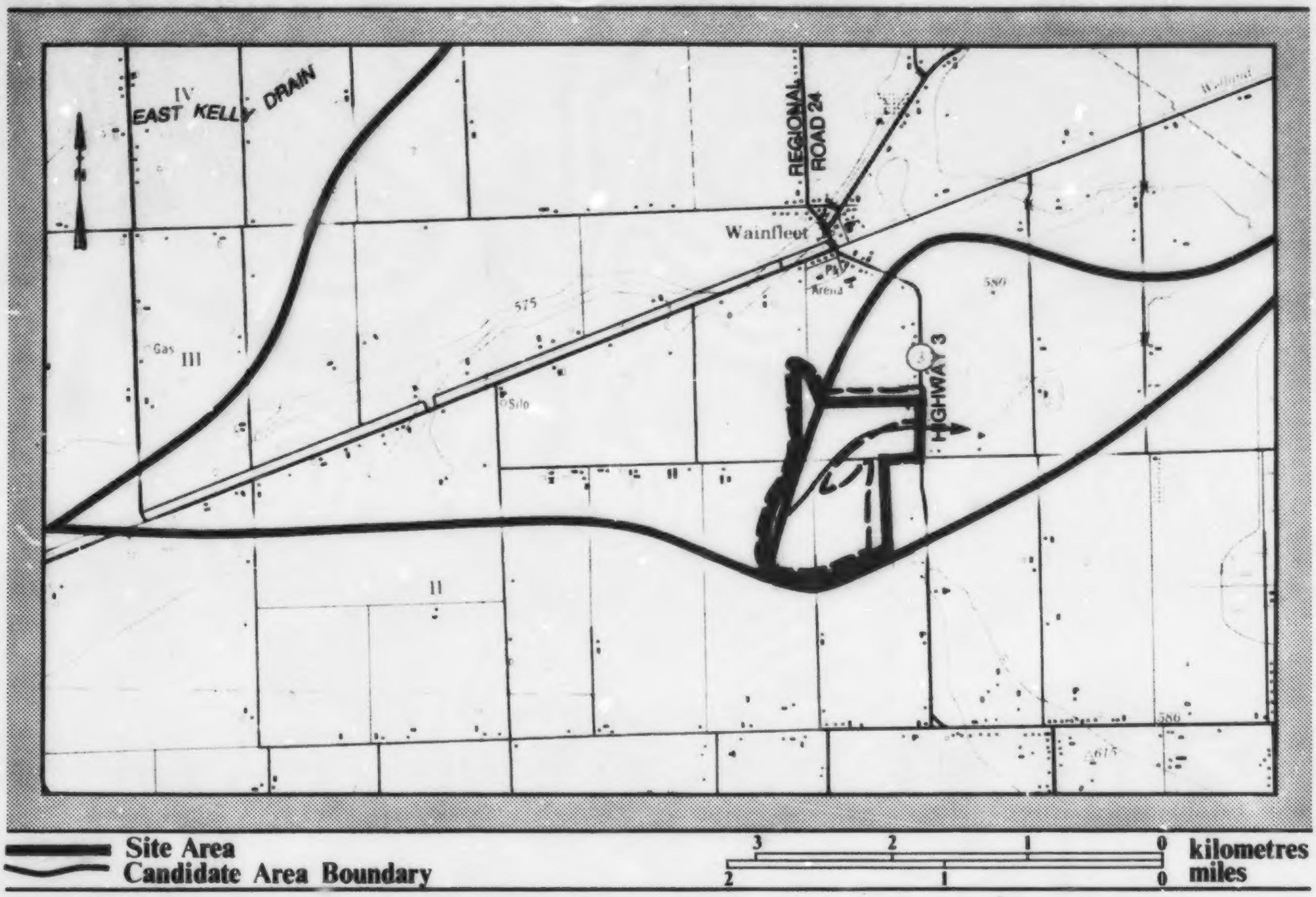
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-14C



IV
EAST KELLY DRAIN
REGIONAL ROAD 24
Wainfleet
Park
Arena
575
580
Gas
III
Silo
HIGHWAY 3
II
586
615
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by a stream course.

The characteristics of the site area were reviewed. Transportation access is very indirect from a 400 series highway. The site area is also in close proximity to Wainfleet and to sensitive crops.

It was concluded that there are site areas with less severe constraints which are industrially designated, or which have better or more direct transportation access located in the same vicinity. This site area has no major off-setting benefits. It was therefore decided to drop PI-15c from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 1 or 2 row crops or corn-wheat to the north; Class 3 or 4 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the west; specialty crops, Provincial Highway 3 and a stream course to the east and a candidate area boundary to the south.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☐
4. land use ☑
5. agriculture ☑
6. social ☑
7. transportation ☑

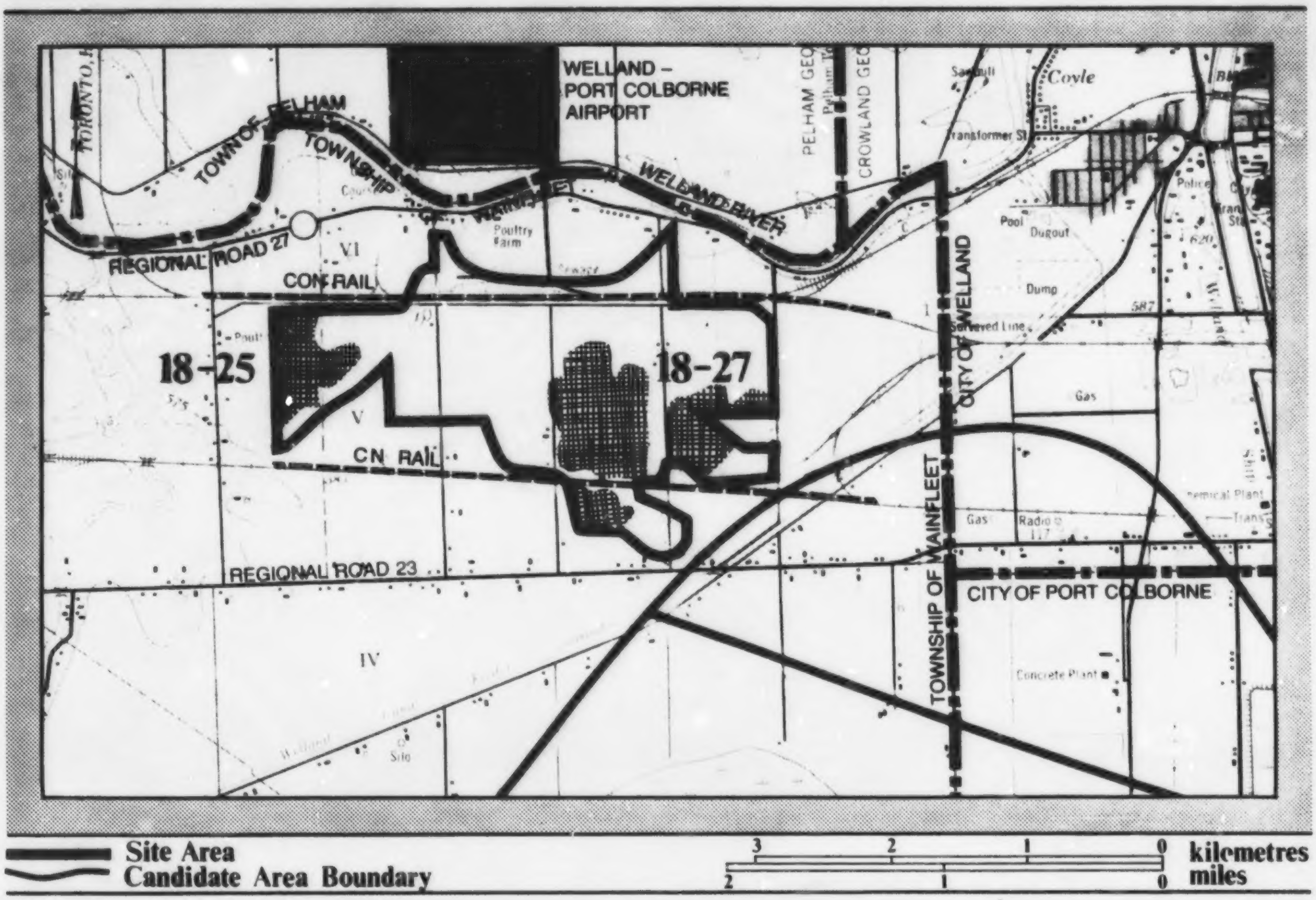
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-15C


WELLAND – PORT COLBORNE AIRPORT
TORONTO
TOWN OF PELHAM
TOWNSHIP OF WAINFLEET
WELLAND RIVER
PELHAM GEO
CROWLAND GEO
Coyle
Sawmill
Transformer St
Police
Pool
Dugout
Dump
Surveyed Line
Poultry Farm
REGIONAL ROAD 27
VI
CONRAIL
18-25
18-27
V
CN RAIL
Gas
Chemical Plant
Radio
REGIONAL ROAD 23
CITY OF WELLAND
TOWNSHIP OF WAINFLEET
CITY OF PORT COLBORNE
IV
Concrete Plant
Silo
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEUs 18-25 and 18-27. A Canadian National Railways rail line crosses the southern portion of the site area. A Conrail rail line crosses the north portion of the site area.

In addition, the development of an incinerator at this location would potentially conflict with airport operations at Welland-Port Colborne Airport. Therefore, the development of this site area as a partially integrated facility was deemed to be unsuitable and it was dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries would not ameliorate the potential conflict between the incinerator stack and airport operations at Welland-Port Colborne Airport.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

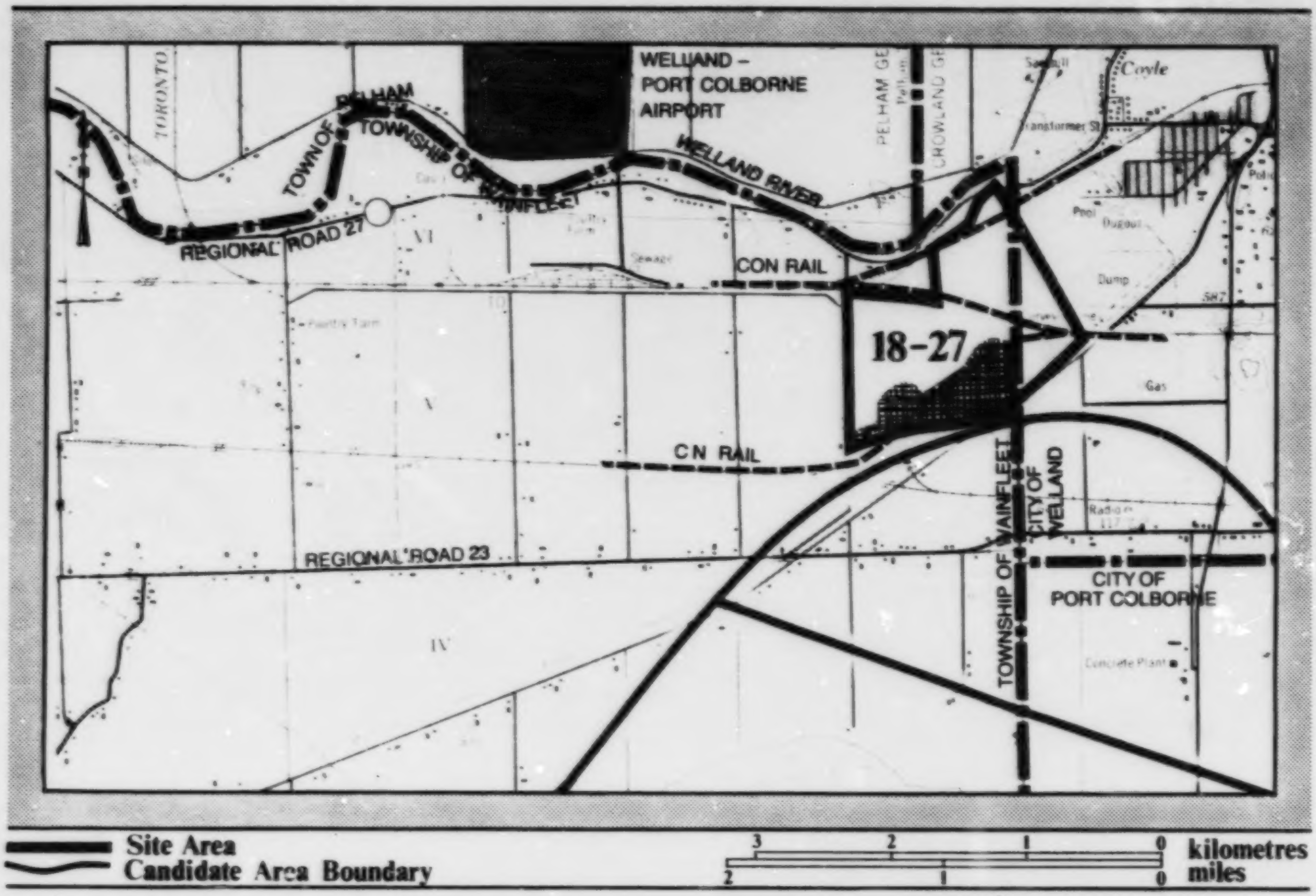
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-16C


WELLAND – PORT COLBORNE AIRPORT
TORONTO
TOWN OF PELHAM
TOWNSHIP OF WAINFLEET
WELLAND RIVER
PELHAM GE
CROWLAND GE
Coyle
Transformer St
Pool
Dugout
Dump
REGIONAL ROAD 27
VI
Sewage
CON RAIL
18-27
V
Gas
CN RAIL
Radio
TOWNSHIP OF WAINFLEET
CITY OF WELLAND
REGIONAL ROAD 23
CITY OF PORT COLBORNE
IV
Concrete Plant
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-27. A Canadian National Railways rail line crosses the southern portion of the site area boundaries. A Conrail rail line crosses the north portion of the site area.

In addition the development of an incinerator at this location would potentially conflict with airport operations at Welland-Port Colborne Airport. Therefore the development of this site area as a partially integrated facility was considered to be unsuitable and it was dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries would not ameliorate the potential conflict between the incinerator stack and airport operations at Welland-Port Colborne Airport.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

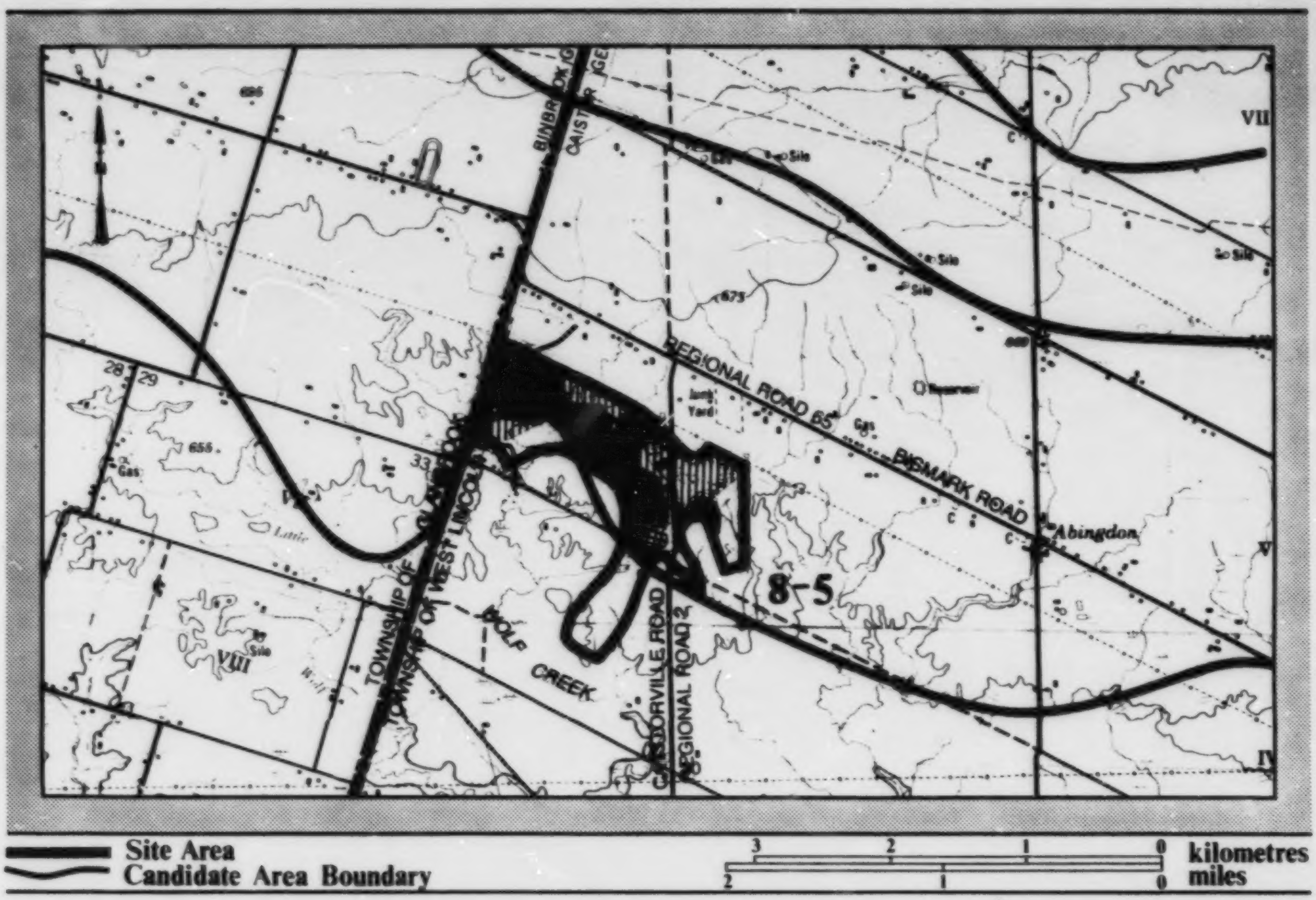
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-17C


REGIONAL ROAD 65
BISMARK ROAD
Abingdon
BINBROOK
CAISTOR
TOWNSHIP OF GLANBROOK
TOWNSHIP OF WEST LINCOLN
WOLF CREEK
CAISTORVILLE ROAD
REGIONAL ROAD 2
8-5
VII
VIII
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEU 8-5. A residential area occurs within the site area boundaries. Niagara Region Road 2 crosses the east portion of the site area. A stream course crosses the western portion of the site area.

The remaining constraint-free area is not large enough to accommodate a partially-integrated facility.

Adjacent Constraints:

Expansion is constrained by a residential area to the north and east; a wetland area and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and pasture, grazing or hay (poor quality) to the south; and to the west by a stream course, Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and a residential area.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☒
5. agriculture ☐
6. social ☐
7. transportation ☒

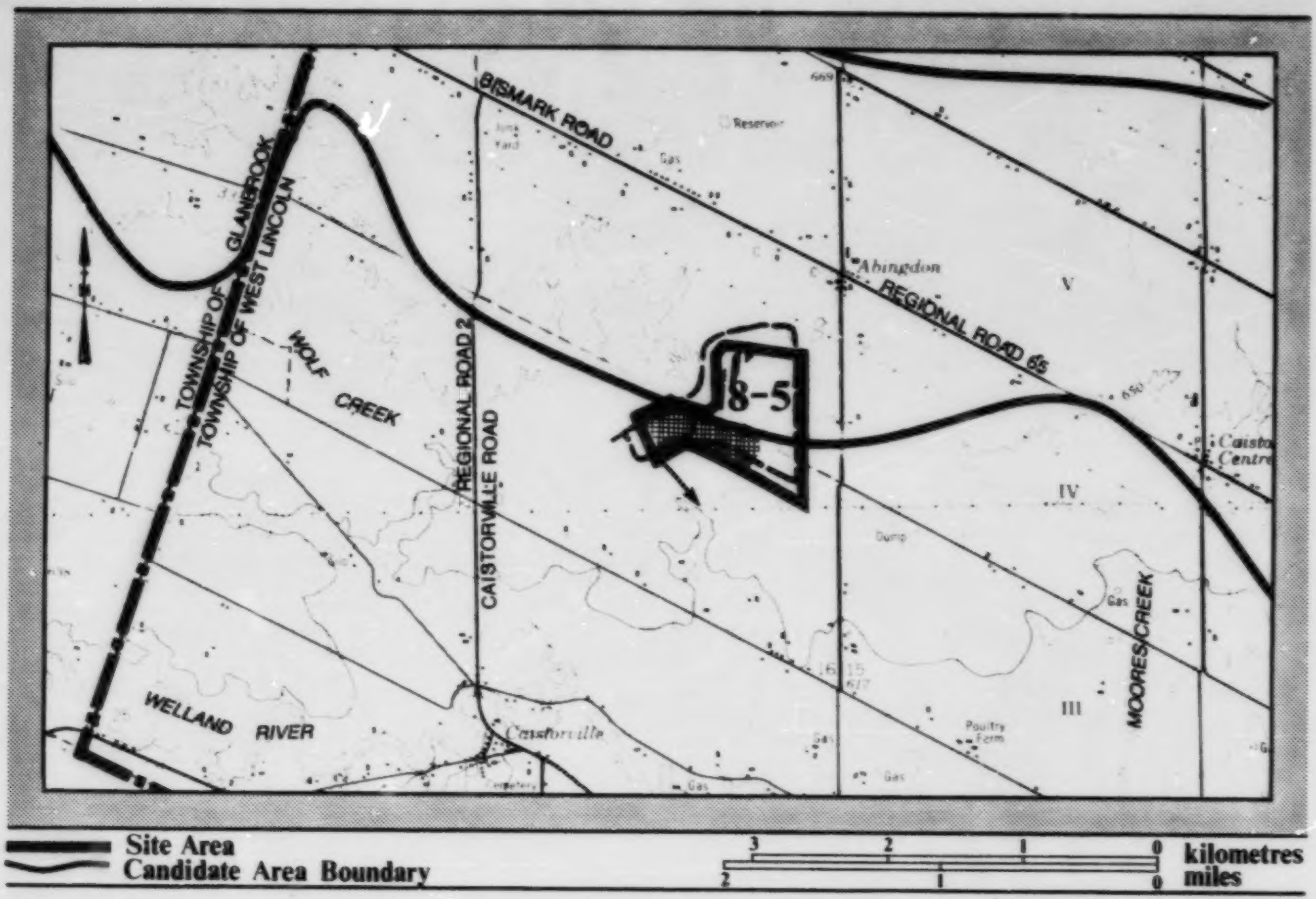
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-18C


BISMARK ROAD
REGIONAL ROAD 65
Abingdon
Reservoir
Junk Yard
Gas
TOWNSHIP OF GLANBROOK
TOWNSHIP OF WEST LINCOLN
WOLF CREEK
REGIONAL ROAD 2
CAISTORVILLE ROAD
8-5
V
IV
III
Dump
MOORES CREEK
Caistor Centre
Poultry Farm
WELLAND RIVER
Caistorville
Cemetery
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 8-5. A stream course/floodplain is found in the northwest portion of the site area.

The site area is designated rural. When associated with LF-3C, LF-8C or LF-9C it did not offer any relative advantages to the development of any of the landfill sites as fully integrated sites. It was considered that the use of PI-19C would not reduce agricultural impacts, but rather it would increase the displacement of agricultural uses and the potential interference with agricultural operations. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion is constrained by a residential area (Abingdon) to the north; a stream course and Class 1 or 2 row crops or corn-wheat to the west; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and pasture, grazing or hay (poor quality) to the south; and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

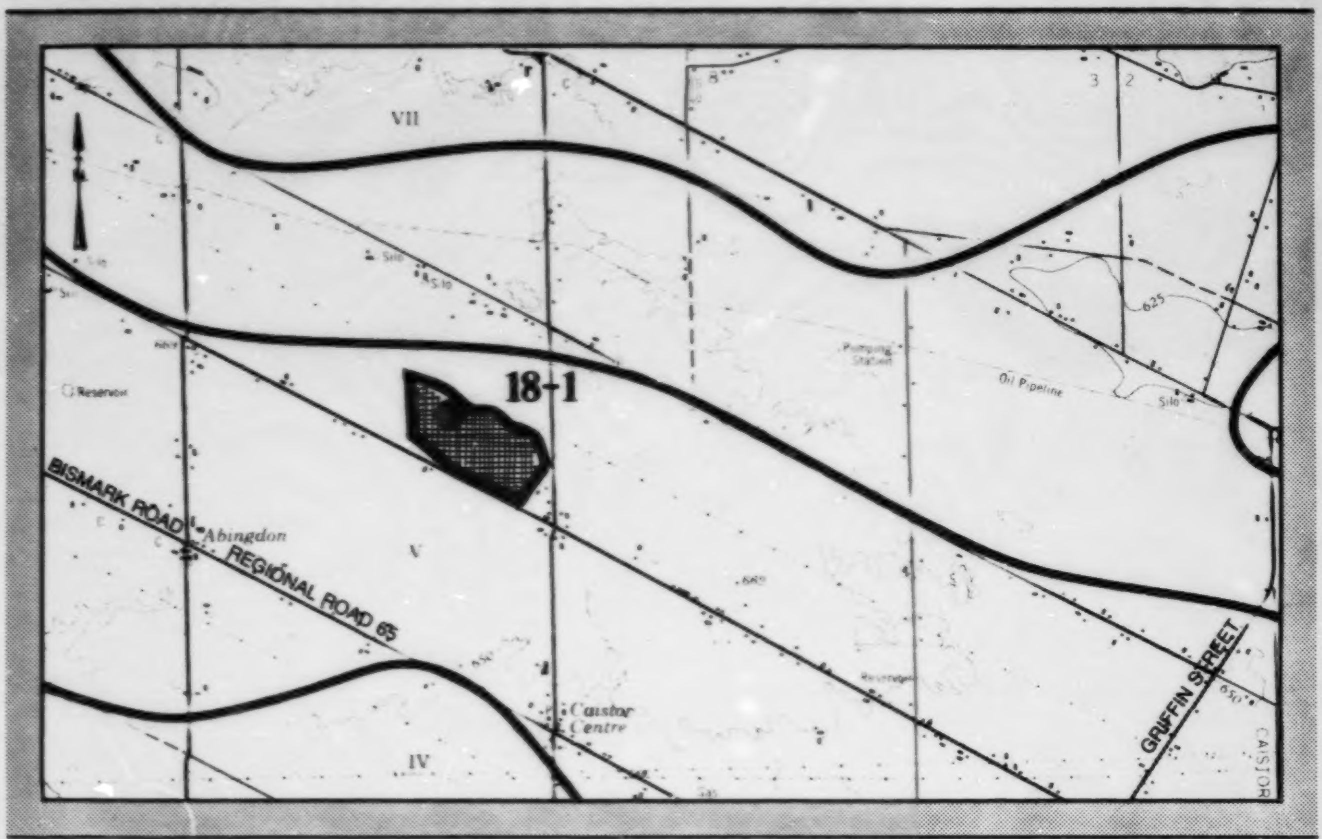
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-19C


VII
18-1
BISMARK ROAD
Abingdon
REGIONAL ROAD 65
V
IV
Caistor Centre
GRIFFIN STREET
Oil Pipeline
Pumping Station
Reservoir
Silo
625
650
CAISTOR

Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEU 18-1.

There is insufficient constraint-free area in which to locate a partially-integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) and an Ontario Hydro transmission line to the north; and by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east, west and south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

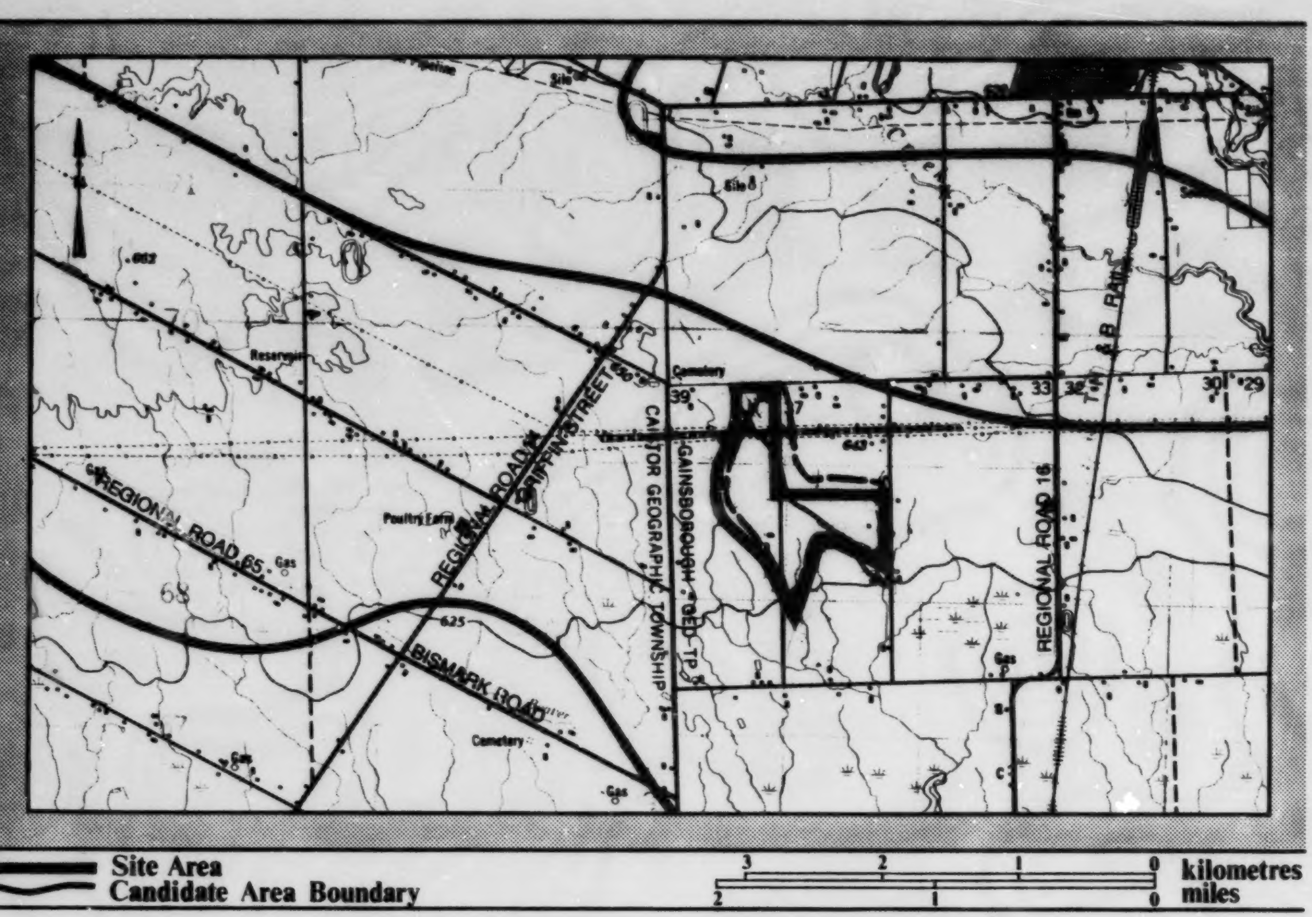
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-20C


REGIONAL ROAD 65
REGIONAL ROAD 14
GRIFFIN STREET
BISMARK ROAD
CAISTOR GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO TP
REGIONAL ROAD 16
T.H.&B. RAIL
Reservoir
Poultry Farm
Cemetery
Silo
Gas
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Ontario Hydro transmission lines cross the north portion of the site area. A stream course also crosses the site area.

The site area is designated rural. When associated with LF-10W, LF-11W, LF-IL, LF-3C, LF-8C or LF-9C, it does not offer any relative dvantages over the development of any of the landfill sites as ully integrated sites. It was concluded that the use of this site rea would not reduce agricultural impacts, but rather it would ncrease the displacement of agricultural uses and the potential nterference with agricultural operations. The site area was herefore dropped from further consideration.

djacent Constraints:

xpansion is constrained by Class 1 or 2 mixed, cereal grain, ay-grain or hay (good quality) to the north, west, south and east; nd Class 1 or 2 pasture, grazing or hay (poor quality) to the ortheast.

Suitability Screen

1. size ☐
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

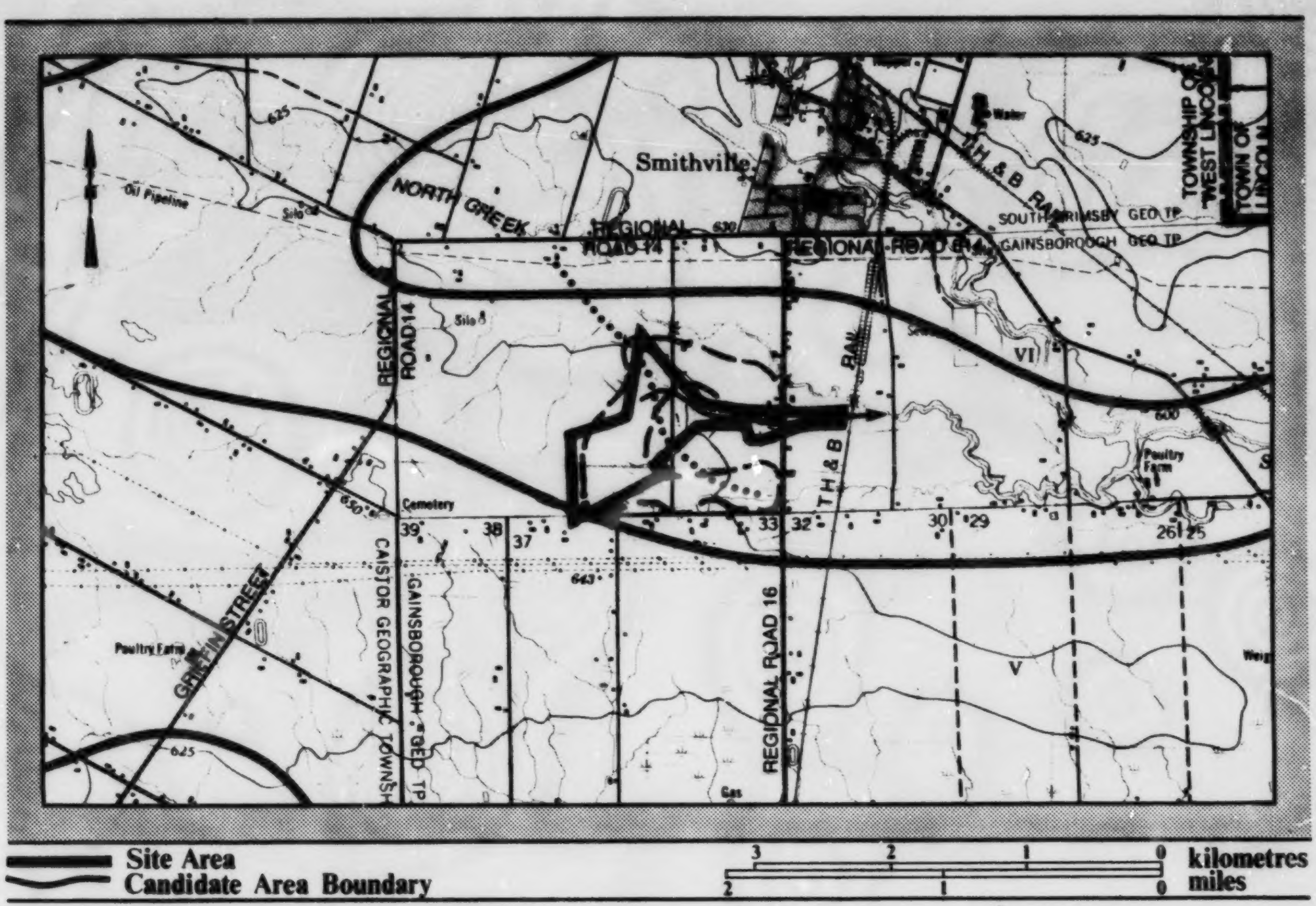
Compatibility Screen

8. existing land use ●
9. designated land use ●

System Screen

10. travel distance ☐
11. access routes ☐

PI-21C


Smithville
NORTH CREEK
REGIONAL ROAD 14
REGIONAL ROAD 14
REGIONAL ROAD 16
REGIONAL ROAD 20
Oil Pipeline
Silo
Water
TH & B RAIL
SOUTH GRIMSBY GEO TP
GAINSBOROUGH GEO TP
TOWNSHIP OF WEST LINCOLN
TOWN OF LINCOLN
VI
V
Poultry Farm
Cemetery
CAISTOR GEOGRAPHIC TOWNSHIP
GAINSBOROUGH GEO TP
GRIFFIN STREET
Gas
625
630
643
650
600
39
38
37
33
32
30
29
26
25
Site Area
Candidate Area Boundary
kilometres
miles
3
2
1
0
2
1
0

Site Constraints:

A stream course and a Bell line cross the site area. Niagara Region Road 16 crosses the eastern portion of the site area. Smithville is approximately 500 m to the north of the site area study area.

The site area is designated rural. When associated with LF-10W, LF-11W, LF-1C, LF-3C, LF-8C or LF-9C, it does not offer any relative advantages to the development of any of the landfill sites as fully integrated sites. It was concluded that the use of this site area would not reduce agricultural impacts, but rather it would increase the displacement of agricultural uses and the potential interference with agricultural operations. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion is constrained by Class 1 or 2 row crops or corn-wheat to the north and west; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to north, south, west and east; and a Toronto, Hamilton and Buffalo Railways rail line to the east.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

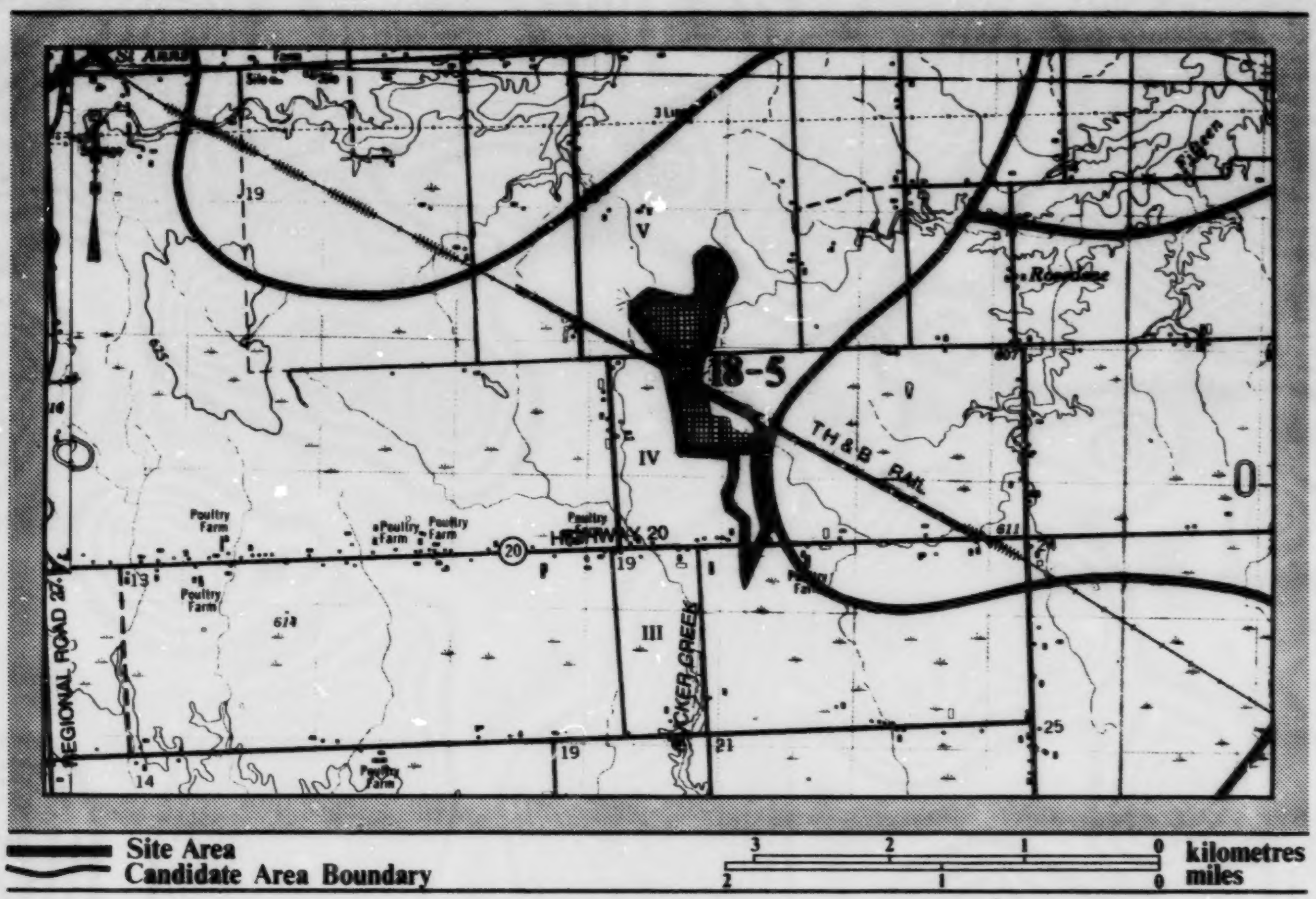
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-22C


St Anns
19
V
18-5
IV
TH & B RAIL
0
Rosedene
Poultry Farm
Poultry Farm
Poultry Farm
Poultry Farm
Poultry Farm
HIGHWAY 20
20
19
III
ICKER CREEK
REGIONAL ROAD 27
613
614
611
14
19
21
25
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-5. It is crossed by a Toronto, Hamilton and Buffalo Railways rail line and by Provincial Highway 20.

The remaining constraint-free area is not large enough to accommodate a partially-integrated facility.

Adjacent Constraints:

Expansion is restricted by Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the north, northeast and west; Class 3 or 4 row crops or corn-wheat to the northwest; a candidate area boundary to the east; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and grazing, pasture and hay (poor quality) to the southwest and west; and Class 1 or 2 row crops or corn-wheat to the west.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

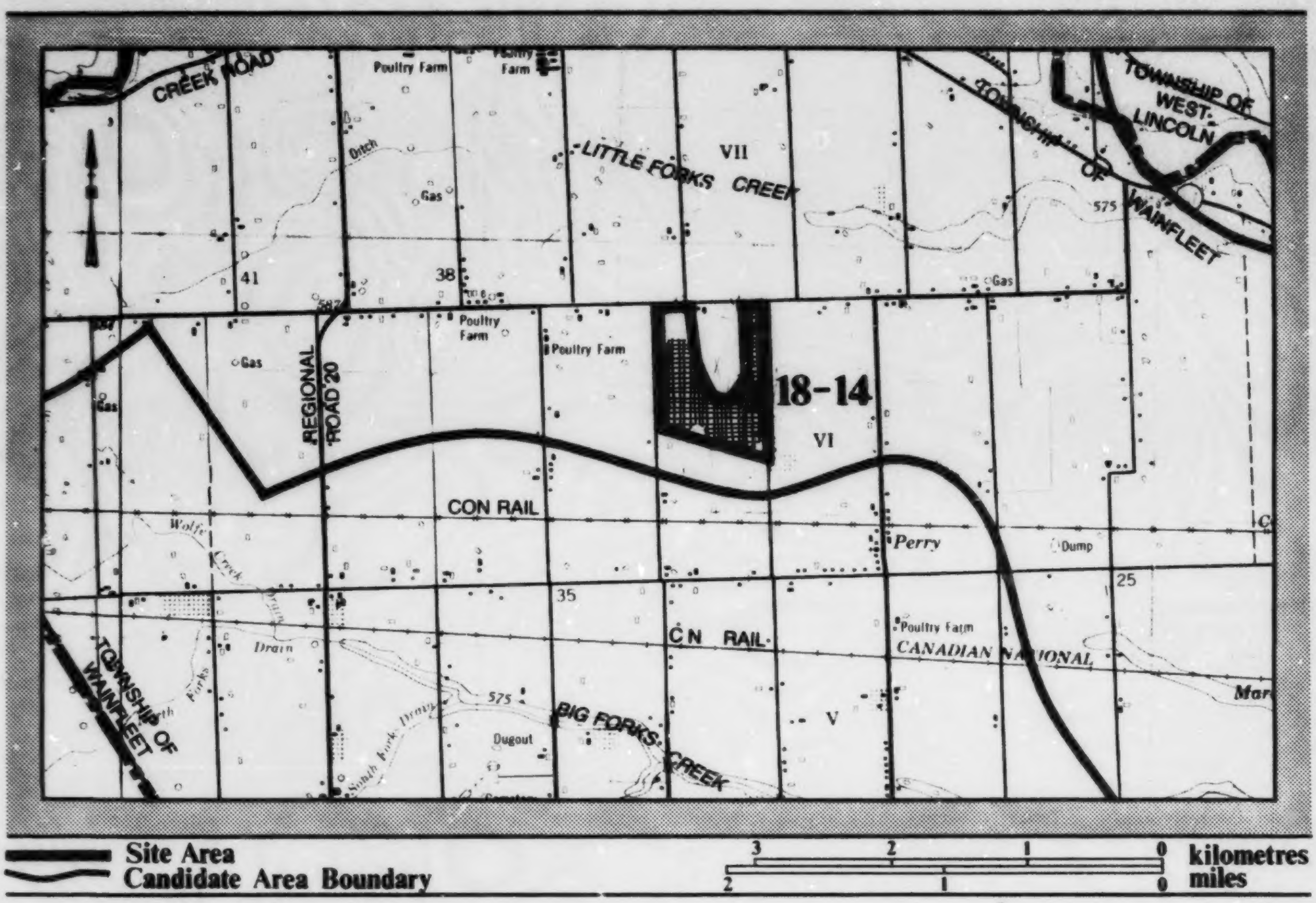
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-23C



CREEK ROAD
Poultry Farm
Poultry Farm
Ditch
Gas
LITTLE FORKS CREEK
VII
TOWNSHIP OF WEST LINCOLN
TOWNSHIP OF WAINFLEET
575
41
38
587
Gas
Gas
Poultry Farm
Poultry Farm
REGIONAL ROAD 20
18-14
VI
CON RAIL
Wolfe Creek Drain
Perry
Dump
25
35
CN RAIL
Poultry Farm
CANADIAN NATIONAL
Drain
TOWNSHIP OF WAINFLEET
575
South Fork Drain
Dugout
BIG FORKS CREEK
V
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 18-14.

The remaining constraint-free area is not large enough to accommodate a partially-integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the north and east; Class 3 or 4 row crops or corn-wheat to the north, south and west and a residential area (Perry) to the southeast.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

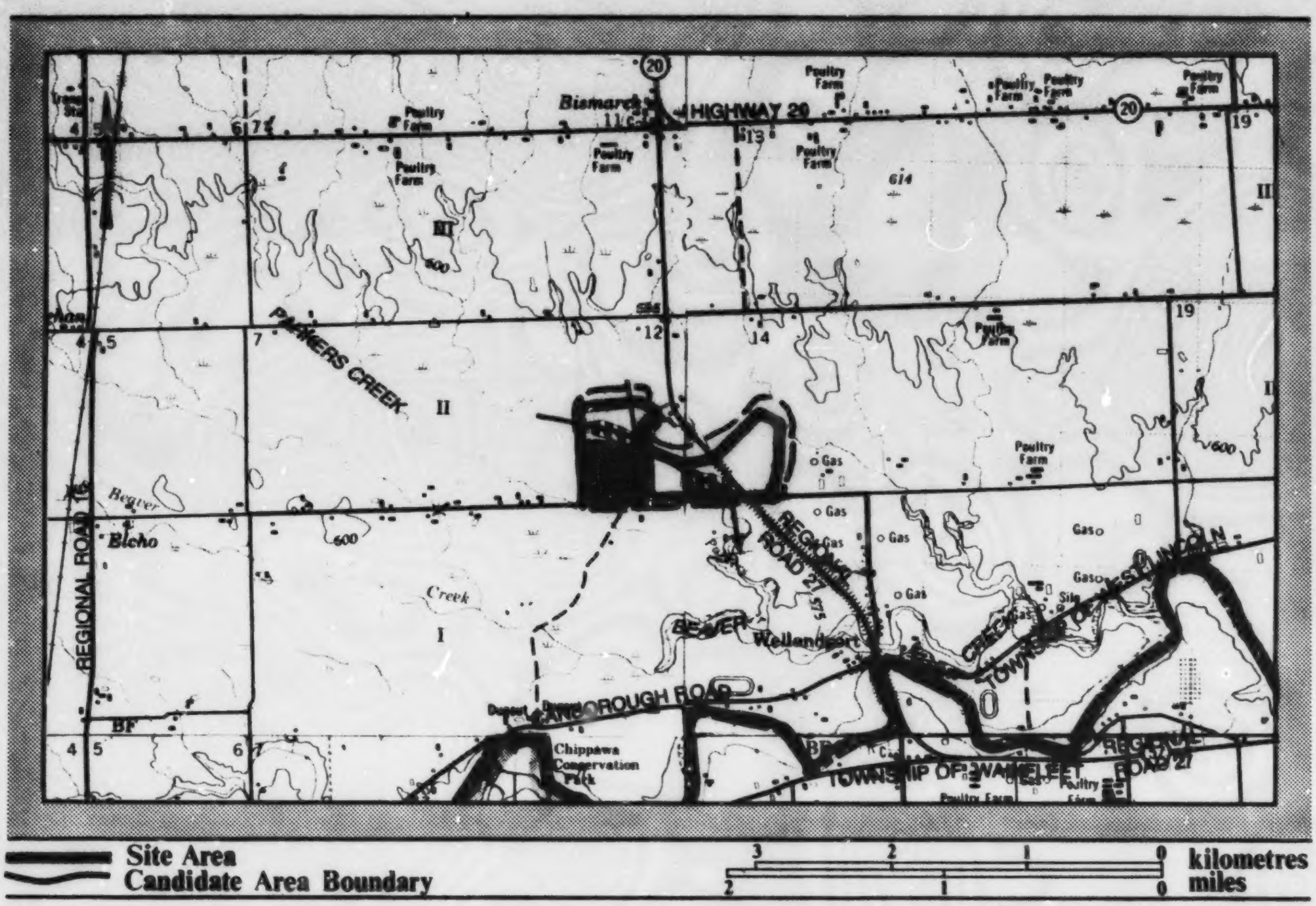
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-24C


HIGHWAY 20
20
Bismarck
Poultry Farm
614
600
PACKERS CREEK
II
III
I
12
13
14
19
Gas
REGIONAL ROAD 27
REGIONAL ROAD
Beaver
Bicho
Creek
BEAVER
Wellandport
CANBOROUGH ROAD
Chippawa Conservation Park
TOWNSHIP OF WAINFLEET
TOWNSHIP OF WEST LINCOLN
BF
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
miles

Site Constraints:

The site area is crossed by a floodplain and Niagara Region Road 27. Agricultural exclusionary factor Class 1 and 2 pasture, grazing and hay (poor quality) is found within the site area boundaries.

The remaining constraint-free area is not large enough to accommodate a partially-integrated facility.

Consideration was given to placing the operations area of the facility within the remaining constraint-free area. However, the technical buffer extended across major transportation facilities and into constrained areas. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north, east, south and west; by Class 1 or 2 row crops or corn-wheat to the west and by a residential area (Wellandport) to the southeast.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☒
6. social ☐
7. transportation ☒

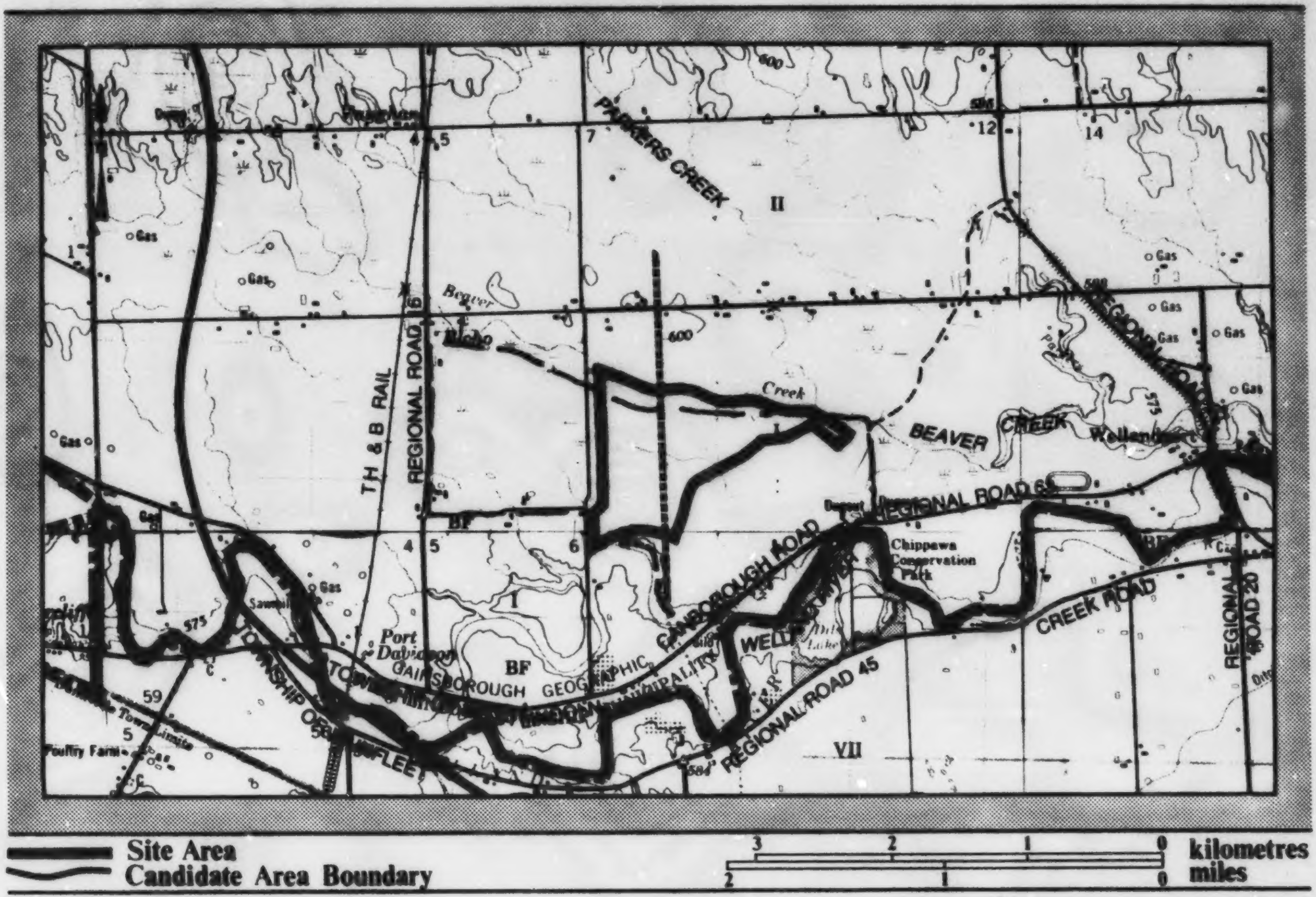
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-25C


PARKERS CREEK
II
14
12
7
5
4
600
Gas
Beaver
Creek
BEAVER CREEK
Wellandport
TH & B RAIL
REGIONAL ROAD 9
REGIONAL ROAD 63
BF
6
CANBOROUGH ROAD
Chippawa Conservation Park
WELLAND RIVER
Port Davidson
GAINSBOROUGH GEOGRAPHIC TOWNSHIP
Sawmill
575
59
Poultry Farm
TOWNSHIP OF WAINFLEET
REGIONAL ROAD 45
CREEK ROAD
REGIONAL ROAD 20
VII
584
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by an Ontario Hydro transmission line.

The site area is designated rural. When associated with LF-10W, LF-11W, LF-1C, LF-8C or LF-9C, it does not offer any relative advantages to the development of any of the landfill sites as fully integrated sites. It was concluded that the use of this site area would not reduce agricultural impacts, but rather it would increase the displacement of agricultural uses and the potential interference with agricultural operations. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a flood plain to the north and south; Class 1 or 2 row crops or corn-wheat to the southwest; Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the west; and Class 1 or 2 mixed cereal grain, hay-grain or hay (good quality to the east.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

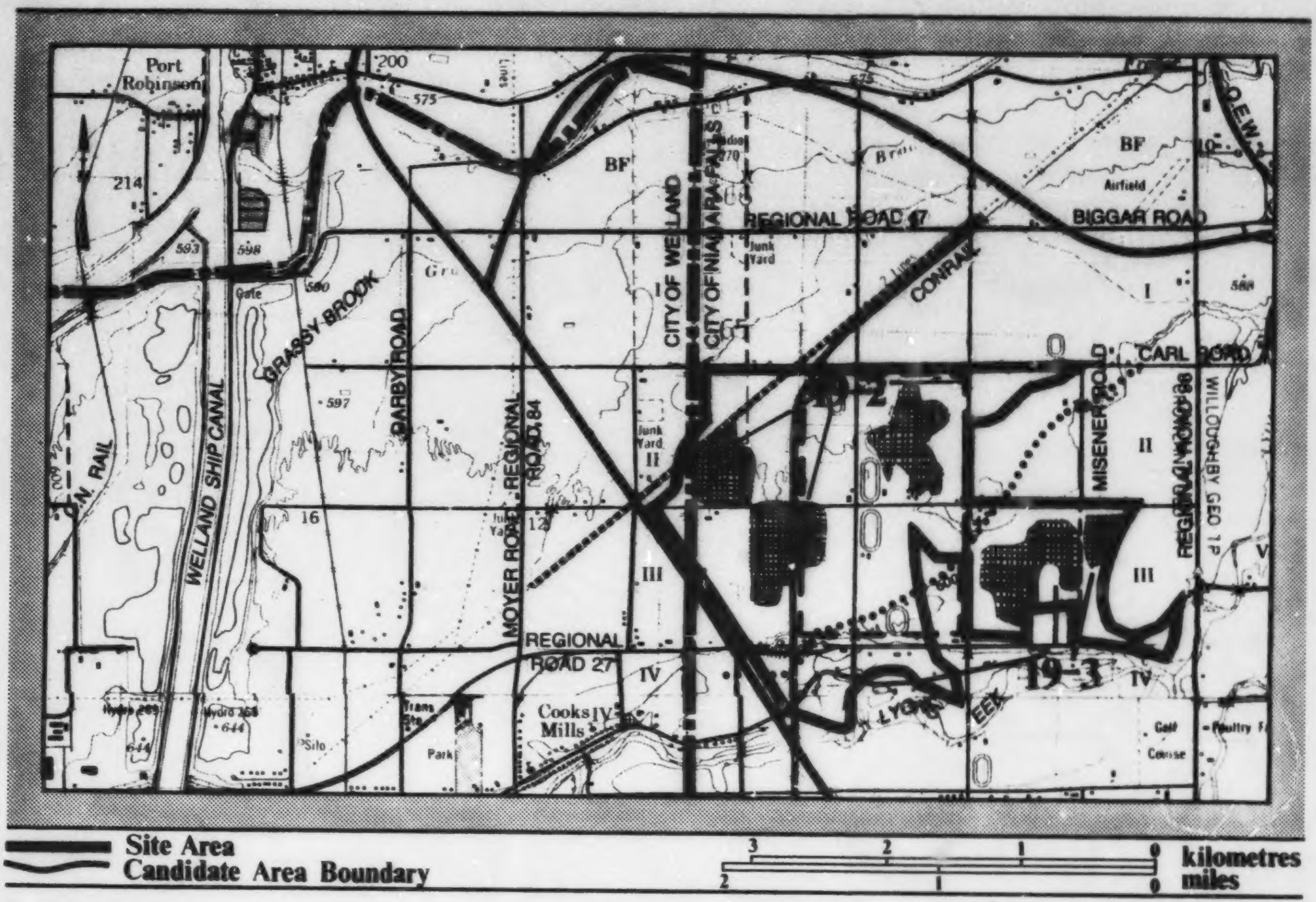
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-26C


Port Robinson
214
593
598
Gate
590
200
575
GRASSY BROOK
Gr
DARBY ROAD
597
C.N. RAIL
WELLAND SHIP CANAL
16
MOYER ROAD
REGIONAL ROAD 84
12
Junk Yard
II
III
IV
BF
CITY OF WELLAND
CITY OF NIAGARA FALLS
270
REGIONAL ROAD 57
Junk Yard
CONRAIL
19-2
19-3
REGIONAL ROAD 27
Cooks Mills
Park
Silo
Hydro 269
Hydro 268
644
Trans Sta
LYONS CREEK
BIGGAR ROAD
Airfield
BF
I
588
CARL ROAD
MISENER ROAD
REGIONAL ROAD 98
WILLOUGHBY GEO 1P
II
III
IV
V
Golf Course
Poultry F
QEW
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 19-2 and 19-3. It is crossed by a ConRail rail line, an Ontario Hydro transmission line, a Bell line and Niagara Region Road 27.

Sufficient area remains in which a landfill or integrated facility could be located.

Adjacent Constraints:

Expansion is constrained by a floodplain to the south and east; Class 3 or 4 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the south; a stream course to the west; and Carl Road, the site area boundary of LF-3E to the north; and Class 1 or 2 row crops or corn-wheat to the east.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

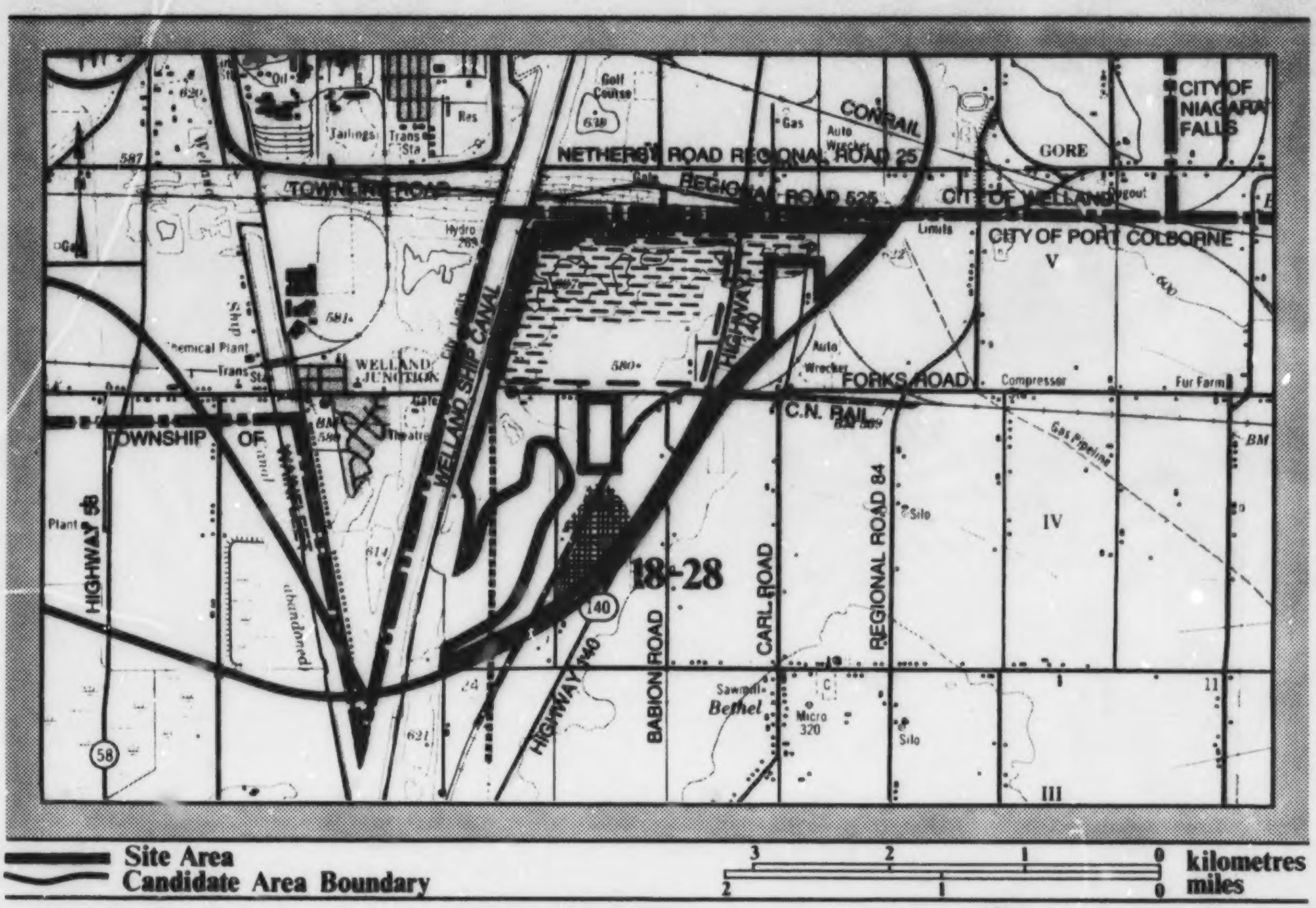
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-1E


CITY OF NIAGARA FALLS
CONRAIL
NETHERBY ROAD REGIONAL ROAD 25
REGIONAL ROAD 525
TOWNLINE ROAD
CITY OF WELLAND
CITY OF PORT COLBORNE
GORE
V
IV
III
Golf Course
Tailings
Trans Sta
Res
Oil
Gas
Auto Wrecker
Hydro
Chemical Plant
WELLAND JUNCTION
WELLAND SHIP CANAL
HIGHWAY 140
FORKS ROAD
C.N. RAIL
Gas Pipeline
Compressor
Fur Farm
TOWNSHIP OF WAINFLEET
HIGHWAY 58
Plant
abandoned
18-28
140
58
BABION ROAD
CARL ROAD
REGIONAL ROAD 84
Silo
Sawmill
Bethel
Micro 320
Theatre
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

SEU 18-28 is found in the southern portion of the site area. Ontario Hydro transmission lines cross the western portion of the site area. A Canadian National Railways rail line crosses the southeastern portion of the site area. There is a large area of spoil located within the site area boundaries. The site area is also in close proximity to Welland.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Niagara Region Road 25 and by Canadian National Railways and ConRail rail lines to the north; the Welland Canal to the west; a wetland area and a candidate area boundary to the south; and a candidate area boundary and class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the east.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

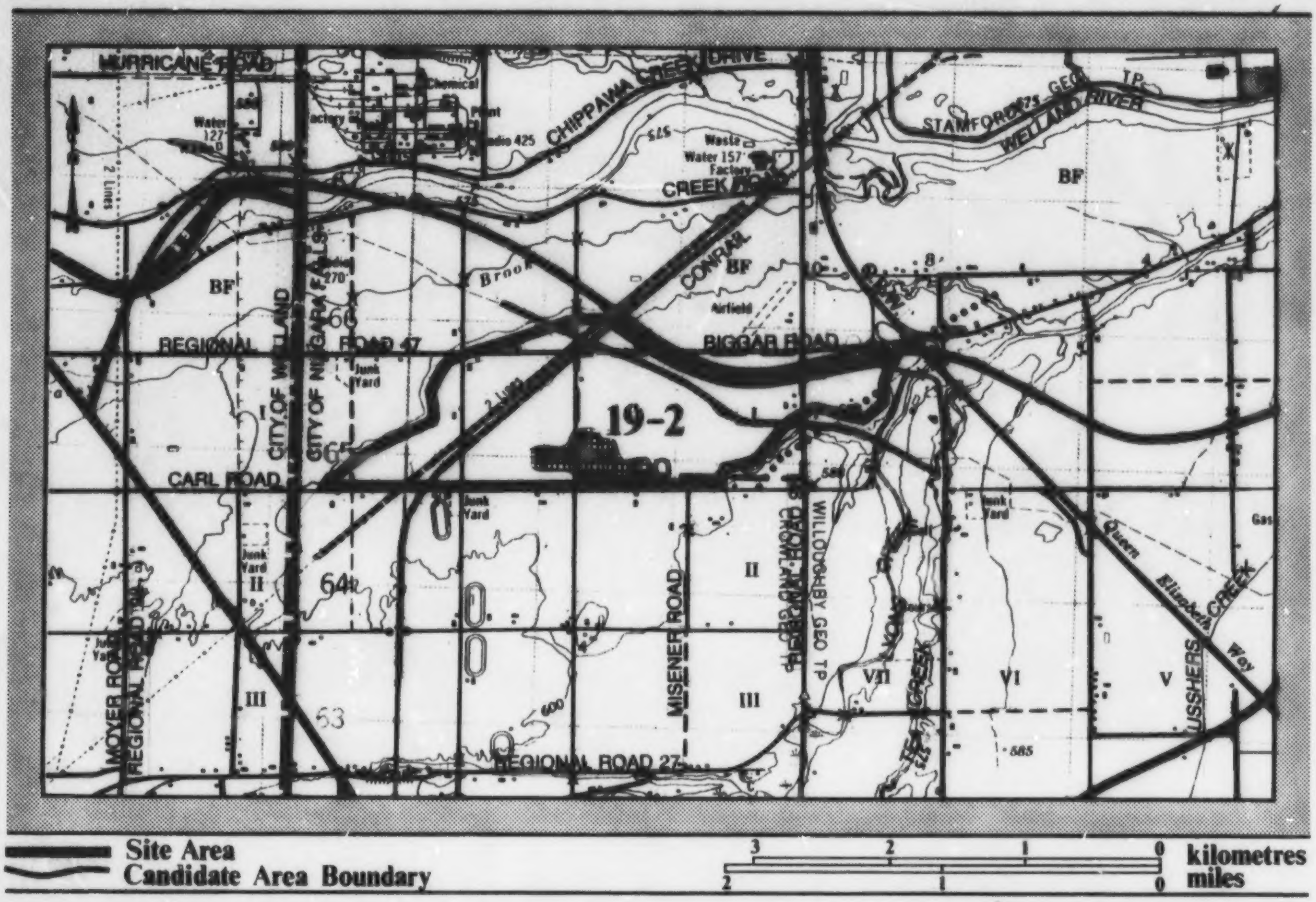
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-2E


HURRICANE ROAD
CHIPPAWA CREEK DRIVE
STAMFORD GEO TP
WELLAND RIVER
CREEK ROAD
Chemical
Plant
Radio 425
Water 127
Factory
Waste Water 157
Factory
BF
BF
BF
CONRAIL
Airfield
Brook
REGIONAL ROAD 47
BIGGAR ROAD
CITY OF WELLAND
CITY OF NIAGARA FALLS
Junk Yard
19-2
CARL ROAD
Junk Yard
Junk Yard
Junk Yard
Junk Yard
II
II
III
III
64
63
65
66
MISENER ROAD
CROWLAND GEO TP
WILLOUGHBY GEO TP
VII
VI
V
Queen Elizabeth Way
USSHERS CREEK
MOYER ROAD
REGIONAL ROAD 98
REGIONAL ROAD 27
600
585
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by an Interprovincial Pipelines Limited high pressure oil pipeline, a ConRail rail line, Niagara Region Road 47, a Bell line and an Ontario Hydro transmission line. SEU 19-2 occurs in the south portion of the site area.

Sufficient constraint-free area remains in which to locate a landfill or integrated facility.

Adjacent Constraints:

Expansion is constrained by a floodplain to the east; Class 1 or 2 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality), Carl Road and the site area boundary of LF-1E to the south; the candidate area boundary to the north and a stream course to the west.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

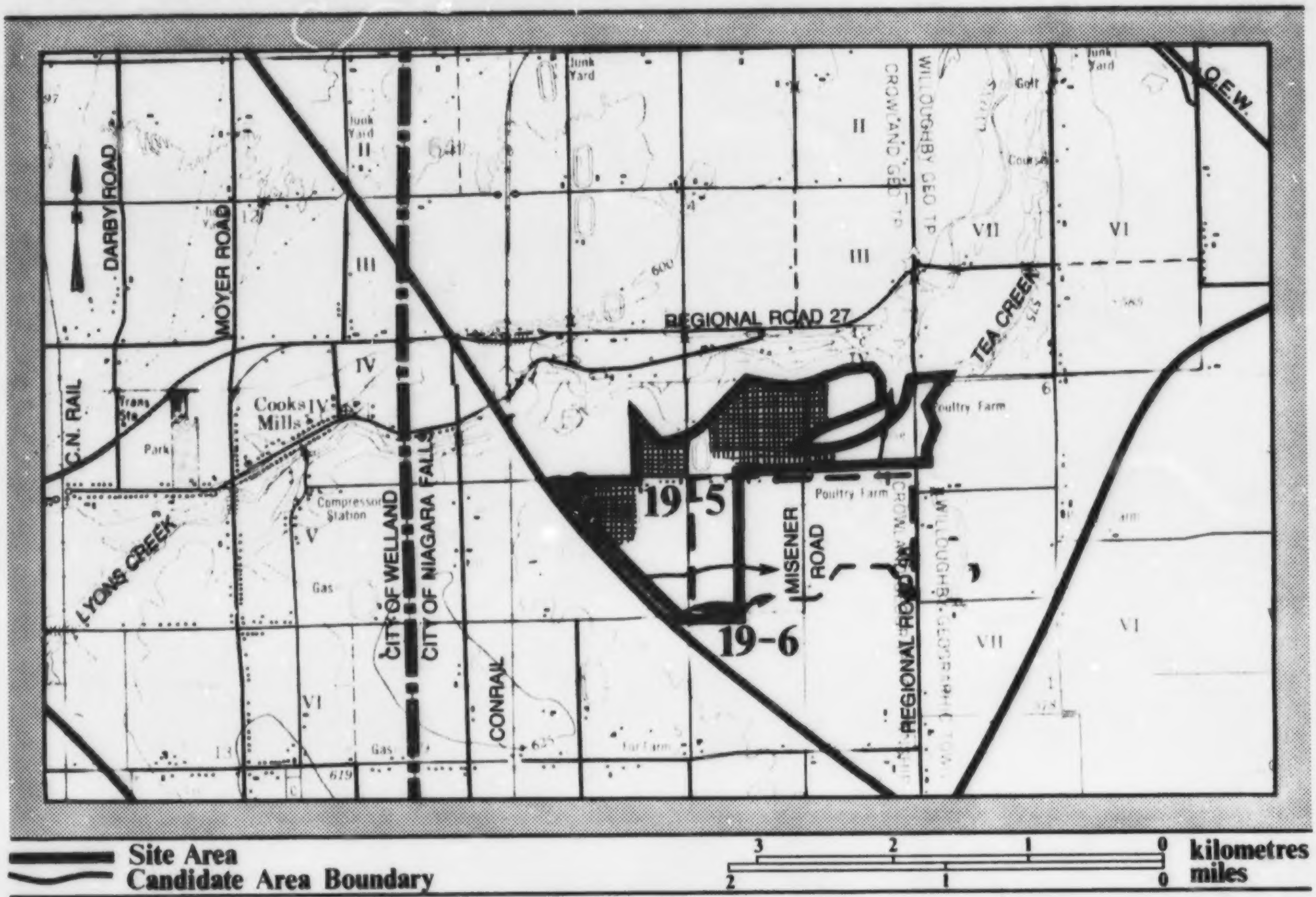
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-3E


DARBY ROAD
MOYER ROAD
C.N. RAIL
LYONS CREEK
Cooks Mills
Park
Compressor Station
Gas
CITY OF WELLAND
CITY OF NIAGARA FALLS
CONRAIL
Junk Yard
REGIONAL ROAD 27
CROWLAND GEO TP
WILLOUGHBY GEO TP
Golf Course
TEA CREEK
Q.E.W.
Poultry Farm
MISENER ROAD
REGIONAL ROAD 98
19-5
19-6
II
III
IV
V
VI
VII
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEUs 19-5 and 19-6. Niagara Region Road 98 crosses the eastern portion of the site area. Three stream courses cross the site area.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a floodplain, Class 3 row crops or corn-wheat and SEU 19-4 to the north; a candidate area boundary to the southwest; Class 3 row crops or corn-wheat to the south and east; and Class 1 or 2 row crops or corn-wheat and floodplain to the east.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

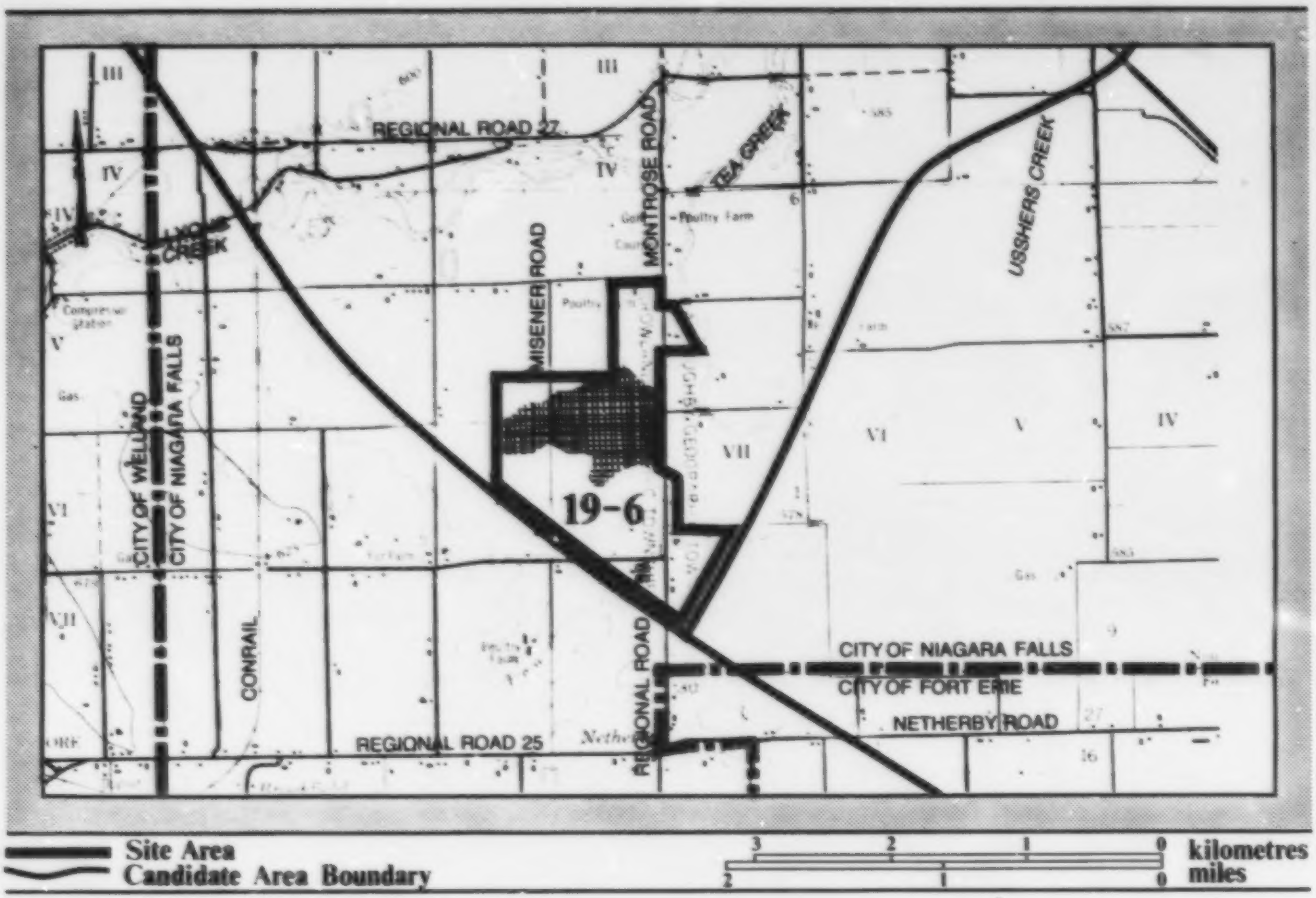
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-4E


III
III
REGIONAL ROAD 27
MONTROSE ROAD
TEA CREEK
USSHERS CREEK
IV
IV
LYONS CREEK
Poultry Farm
MISENER ROAD
Compressor Station
V
Gas
CITY OF WELLAND
CITY OF NIAGARA FALLS
VI
V
IV
VII
VI
19-6
VII
CONRAIL
REGIONAL ROAD
CITY OF NIAGARA FALLS
CITY OF FORT ERIE
NETHERBY ROAD
REGIONAL ROAD 25
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area conflicts with SEU 19-6. Niagara Region Road 98 crosses the eastern portion of the site area.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 3 row crops or corn-wheat to the north, east and west; a candidate area boundary to the south and east; and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

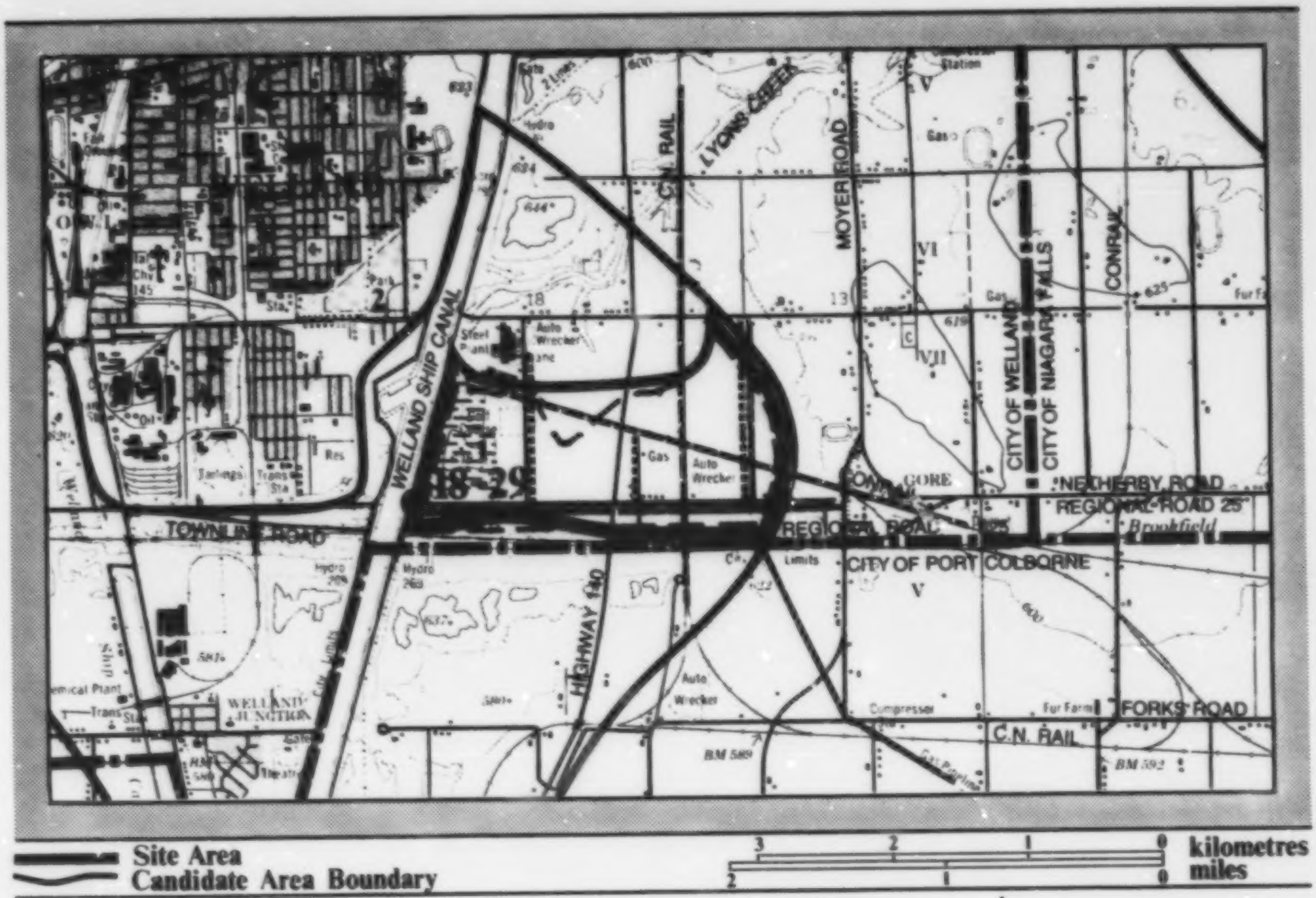
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-5E


WELLAND SHIP CANAL
C.N. RAIL
LYONS CREEK
MOYER ROAD
CITY OF WELLAND
CITY OF NIAGARA FALLS
CONRAIL
VI
VII
V
18-29
TOWNLINE ROAD
REGIONAL ROAD
NETHERBY ROAD
REGIONAL ROAD 25
Brookfield
CITY OF PORT COLBORNE
HIGHWAY 140
FORKS ROAD
C.N. RAIL
WELLAND JUNCTION
Steel Plant
Auto Wrecker
Gas
Hydro
Tailings
Trans Sta
Res
Compressor
Fur Farm
BM 589
BM 592
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by a ConRail rail line in the north portion of the site area. A Canadian National Railways rail line and Provincial Highway 140 cross the site area. An Ontario Hydro transmission line crosses the western portion of the site area. An area of spoil and SEU 18-29 are found in the western portion of the site area. A Consumers' Gas pipeline crosses the eastern portion of the site area.

A portion of the Welland urban area is located within and adjacent to the study area.

The following recreation and/or community features were identified within or adjacent to the site area:

1. BMX track
2. Memorial Park.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion is restricted by residential areas to the north and east; Niagara Region Road 25 and Canadian National Railways and ConRail rail lines to the south; the Welland Canal to the west; and a candidate area boundary to the east.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

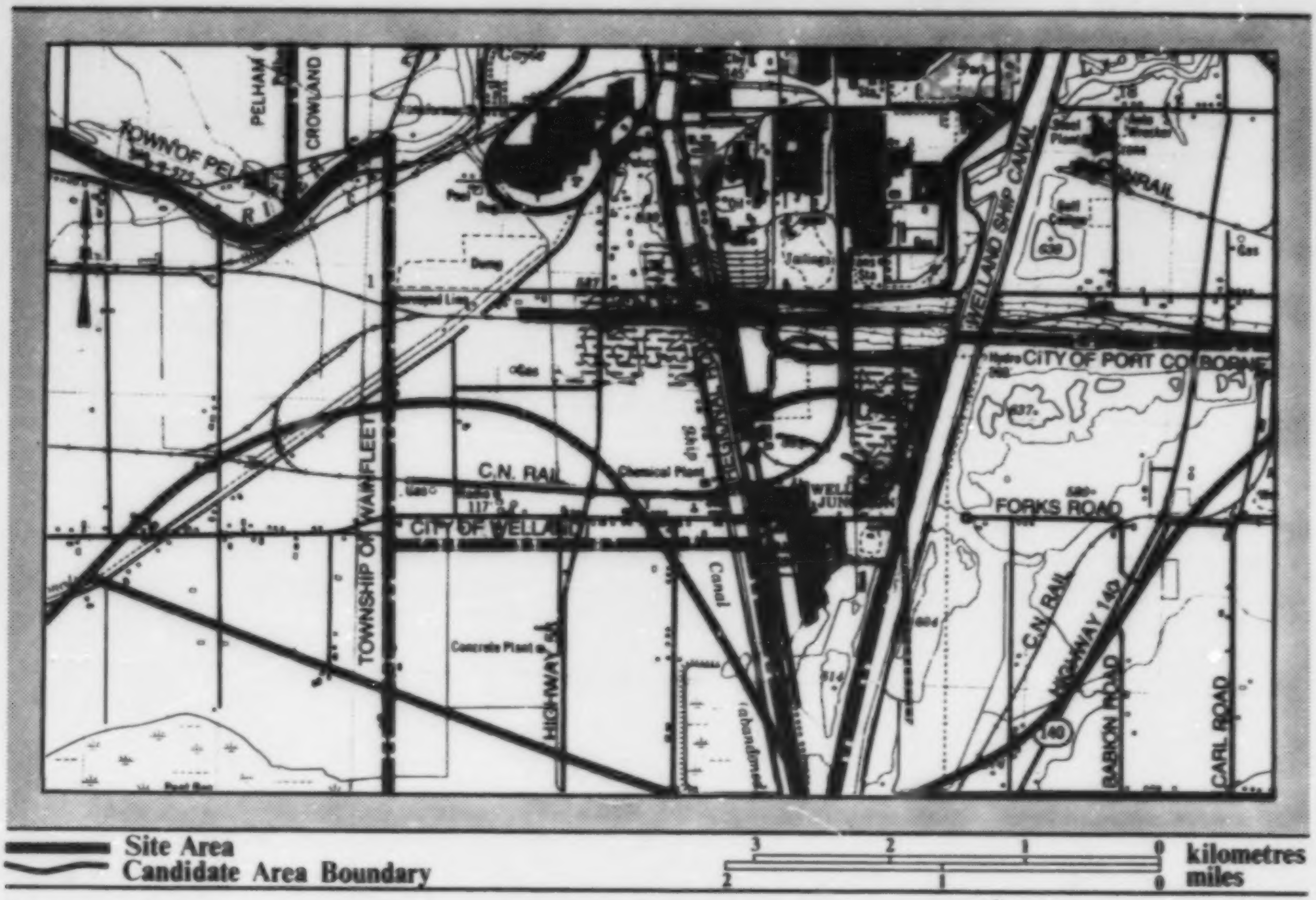
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-6E


PELHAM
CROWLAND
TOWN OF PELHAM
WELLAND SHIP CANAL
CONRAIL
Golf Course
Dump
Gas
CITY OF PORT COLBORNE
C.N. RAIL
Chemical Plant
CITY OF WELLAND
TOWNSHIP OF WAINFLEET
HIGHWAY 58
Concrete Plant
Canal
(abandoned)
FORKS ROAD
C.N. RAIL
HIGHWAY 140
BABION ROAD
CARL ROAD
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

A spoil area occurs in the eastern portion of the site area. The site area is crossed by two Canadian National Railway rail lines, an Ontario Hydro transmission line, a ConRail rail line, a Consumers Gas pipeline, a regional sewage pipeline and Niagara Region Road 25 and Provincial Highway 58A. A factory also occurs within the site area boundaries. Glenwood Park (1) John Deere Playground (2) and Bridgeview Elementary School (3) are adjacent to the south.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a residential area (Welland) to the north; the Welland Canal to the east and west; a residential area (Dain City, Welland Junction) to the south; and spoil or fill areas to the west.

Suitability Screen

1. size ●
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ●
7. transportation ●

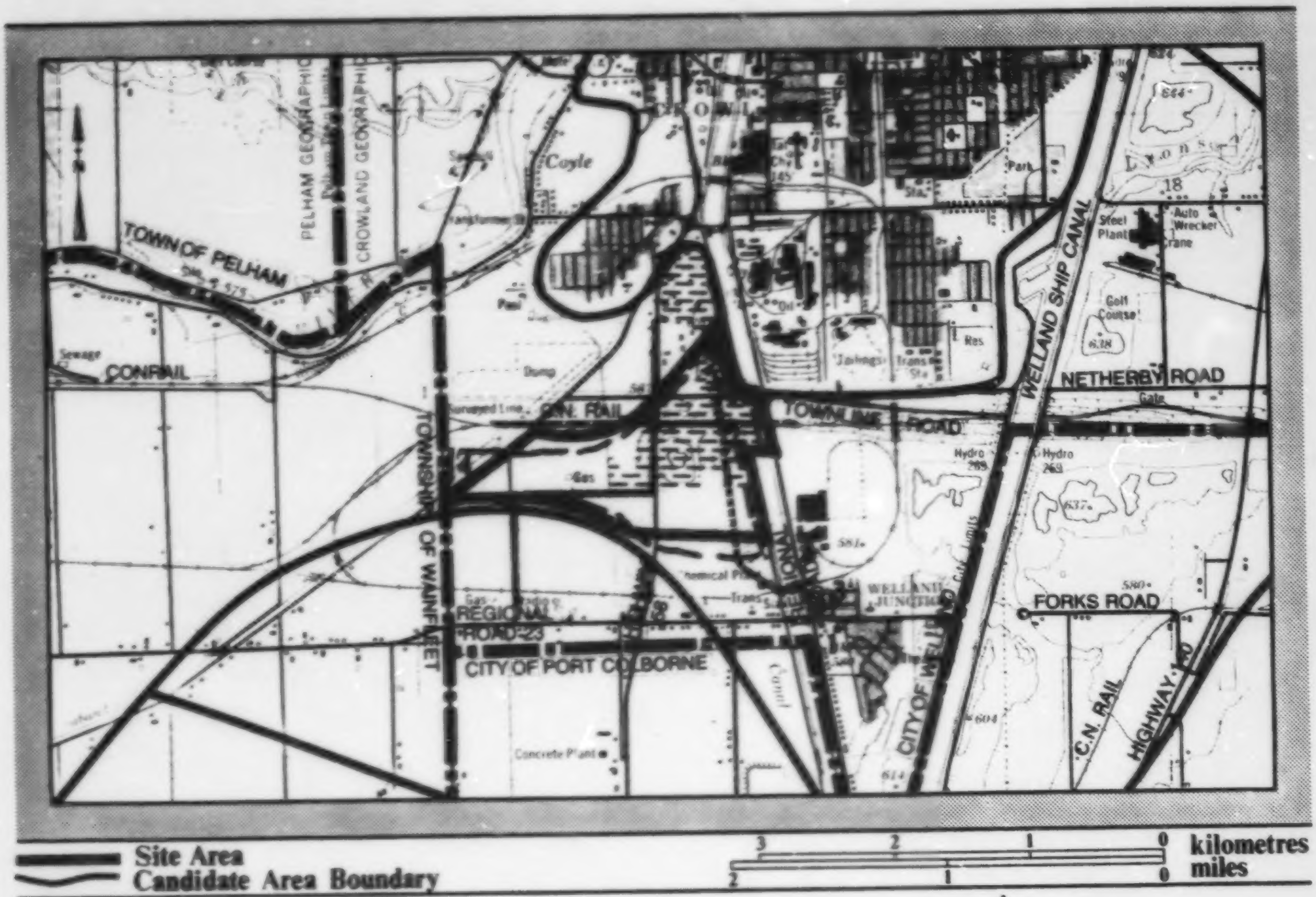
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-7E


TOWN OF PELHAM
PELHAM GEOGRAPHIC
CROWLAND GEOGRAPHIC
Coyle
CONRAIL
Dump
CN. RAIL
TOWNSHIP OF WAINFLEET
TOWNLINE ROAD
NETHERBY ROAD
WELLAND SHIP CANAL
Steel Plant
Auto Wrecker
Golf Course
Hydro
Gas
Chemical Plant
WELLAND JUNCTION
FORKS ROAD
REGIONAL ROAD 23
CITY OF PORT COLBORNE
CITY OF WELLAND
Canal
Concrete Plant
C.N. RAIL
HIGHWAY 140
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Spoil or fill areas occur in the eastern portion of the site area. The site area is crossed by an Ontario Hydro transmission line, a ConRail/Canadian National Railways rail line, Provincial Highways 58 and 58A and a Consumers' Gas pipeline.

The following community and/or recreation features were identified within or adjacent to the site area:

1. Bridgeview Elementary School;
2. Niagara South Rowing Club;
3. John Deere Playground;
4. Welland Feeder Canal;

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion is constrained by residential areas to the north (Welland) and to the south and east (Dain City, Welland Junction); a candidate area boundary to the south; the Welland Canal to the east; and the abandoned Welland Canal feeder and the site area boundary of LF-4C to the west.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

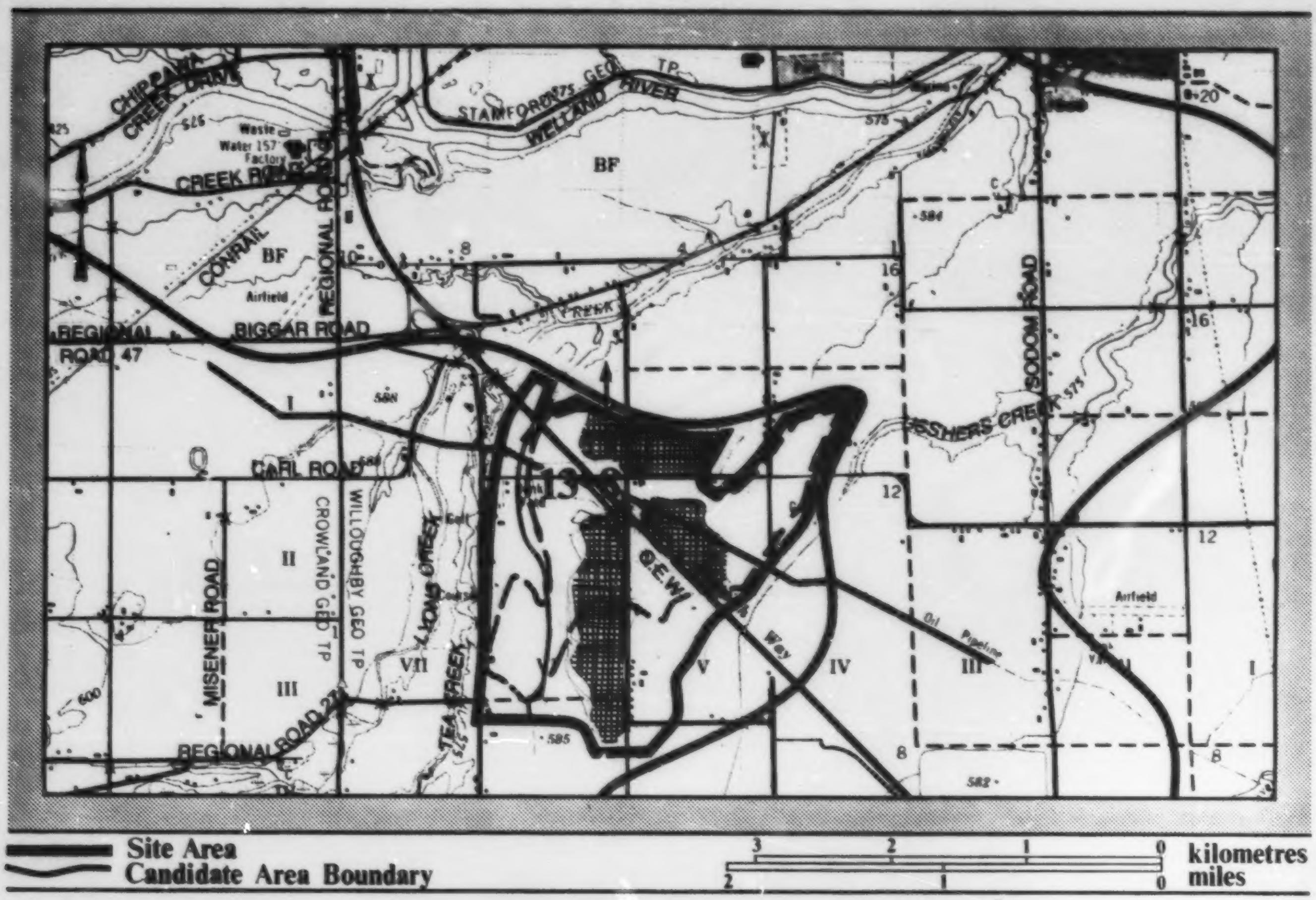
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-8E


CHIPPAWA CREEK DRIVE
CREEK ROAD
Waste Water
Factory
CONRAIL
BF
Airfield
REGIONAL ROAD
REGIONAL ROAD 47
BIGGAR ROAD
STAMFORD GEO TP
WELLAND RIVER
CREEK
575
584
588
586
16
8
12
20
SODOM ROAD
LYONS CREEK
TEA CREEK
WILLOUGHBY GEO TP
CROWLAND GEO TP
MISENER ROAD
CARL ROAD
REGIONAL ROAD 27
13-8
Q.E.W.
Oil Pipeline
I
II
III
IV
V
VII
585
582
600
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 13-8 and is crossed by the Queen Elizabeth Way and an Interprovincial Pipelines Limited high pressure oil pipeline. A stream course crosses the western portion of the site area.

There is insufficient constraint-free area in which to locate a landfill or partially integrated facility.

Adjacent Constraints:

Expansion of the site area is constrained by a candidate area boundary and floodplain to the north, a stream course, floodplain and SEU 19-4 to the west; Class 1 or 2 row crops or corn-wheat to the west; SEU 13-8 to the south; and a candidate area boundary and a floodplain to the east.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

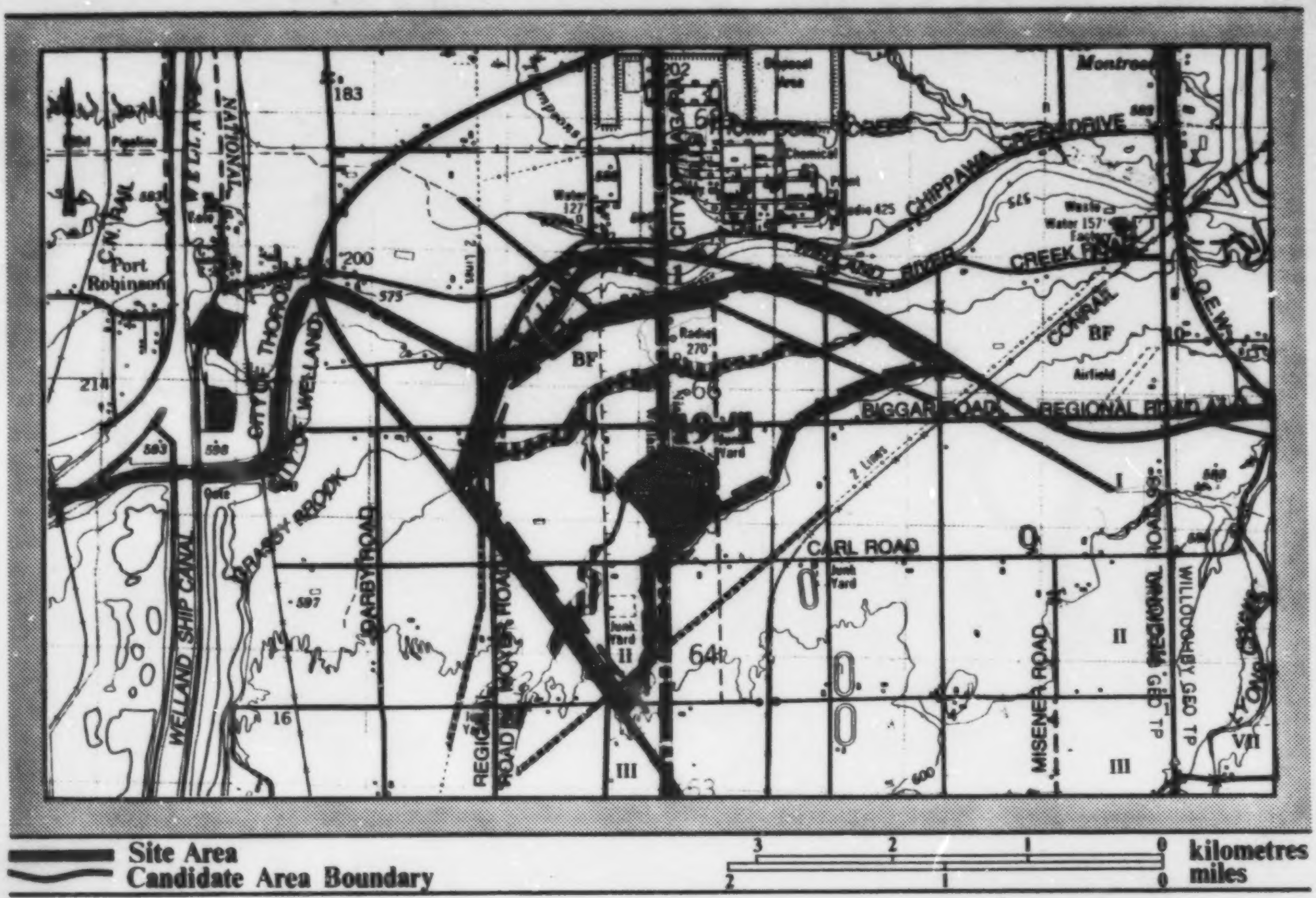
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-9E


Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles
Port Robinson
WELLAND SHIP CANAL
CITY OF THOROLD
CITY OF WELLAND
CHIPPAWA CREEK
WELLAND RIVER
BIGGAR ROAD
REGIONAL ROAD
CARL ROAD
DARBY ROAD
MOYER ROAD
MISENER ROAD
WILLOUGHBY GEO TP
CONRAIL
Montrose
Q.E.W.
BF
Airfield
2 Lines
19-1
64
66
Junk Yard
Bde

Site Constraints:

The site area conflicts with SEU 19-1. It is crossed by stream courses and floodplains, Niagara Region Roads 84 and 47 and an Interprovincial Pipelines Limited high pressure oil pipeline. Two Ontario Hydro transmission lines cross the west and south portions of the site area. A cemetery (1) is located adjacent to the north.

The remaining constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion is restricted by candidate area boundaries to the north, west and south; a floodplain to the north; and a stream course to the east.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☑
7. transportation ☑

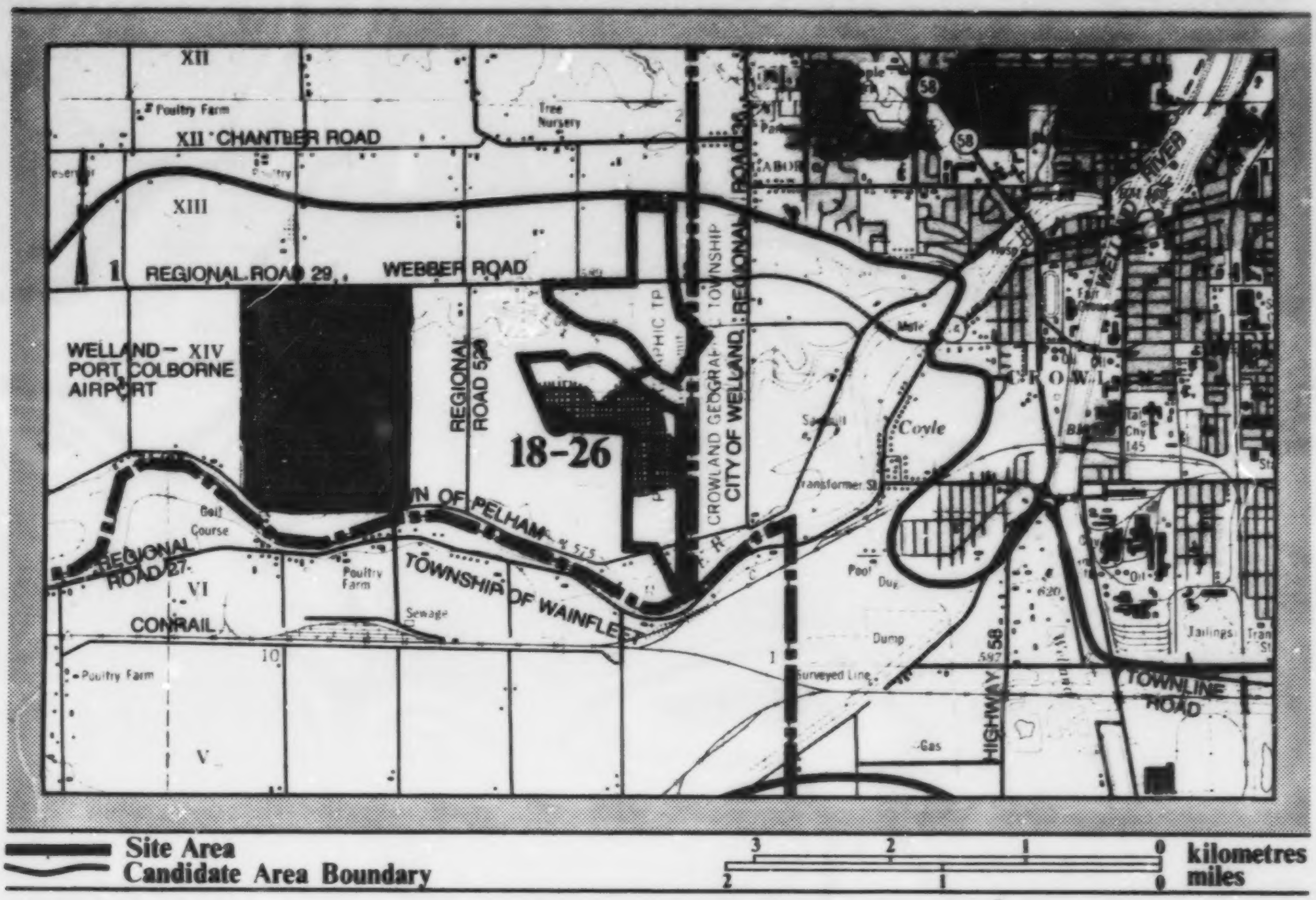
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-10E


XII
Poultry Farm
Tree Nursery
XII CHANTLER ROAD
Poultry
XIII
1
REGIONAL ROAD 29
WEBBER ROAD
WELLAND – PORT COLBORNE AIRPORT
XIV
REGIONAL ROAD 528
18-26
CROWLAND GEOGRAPHIC TOWNSHIP
CITY OF WELLAND
REGIONAL ROAD 50
58
WELLAND RIVER
Coyle
Sawmill
Transformer St
CROWLAND
145
TOWN OF PELHAM
TOWNSHIP OF WAINFLEET
REGIONAL ROAD 27
Golf Course
Poultry Farm
Sewage
VI
CONRAIL
10
Poultry Farm
V
Pool
Dump
Surveyed Line
Gas
HIGHWAY 58
Tailings
TOWNLINE ROAD
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

A floodplain divides the site area into two parts. The south part conflicts with SEU 18-26 and the north part is crossed by Niagara Region Road 29. The site area is also in proximity to the Westbrook Residence/School for Retarded Persons (1).

The remaining unconstrained area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Site area expansion is restricted by a candidate area boundary to the north; a residential area (Welland), a floodplain and Class 1 or 2 row crops or corn-wheat to the east; specialty crops, a floodplain and SEU 13-5 to the south; and Class 1 or 2 row crops or corn-wheat to the northwest and southwest.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☑
7. transportation ☑

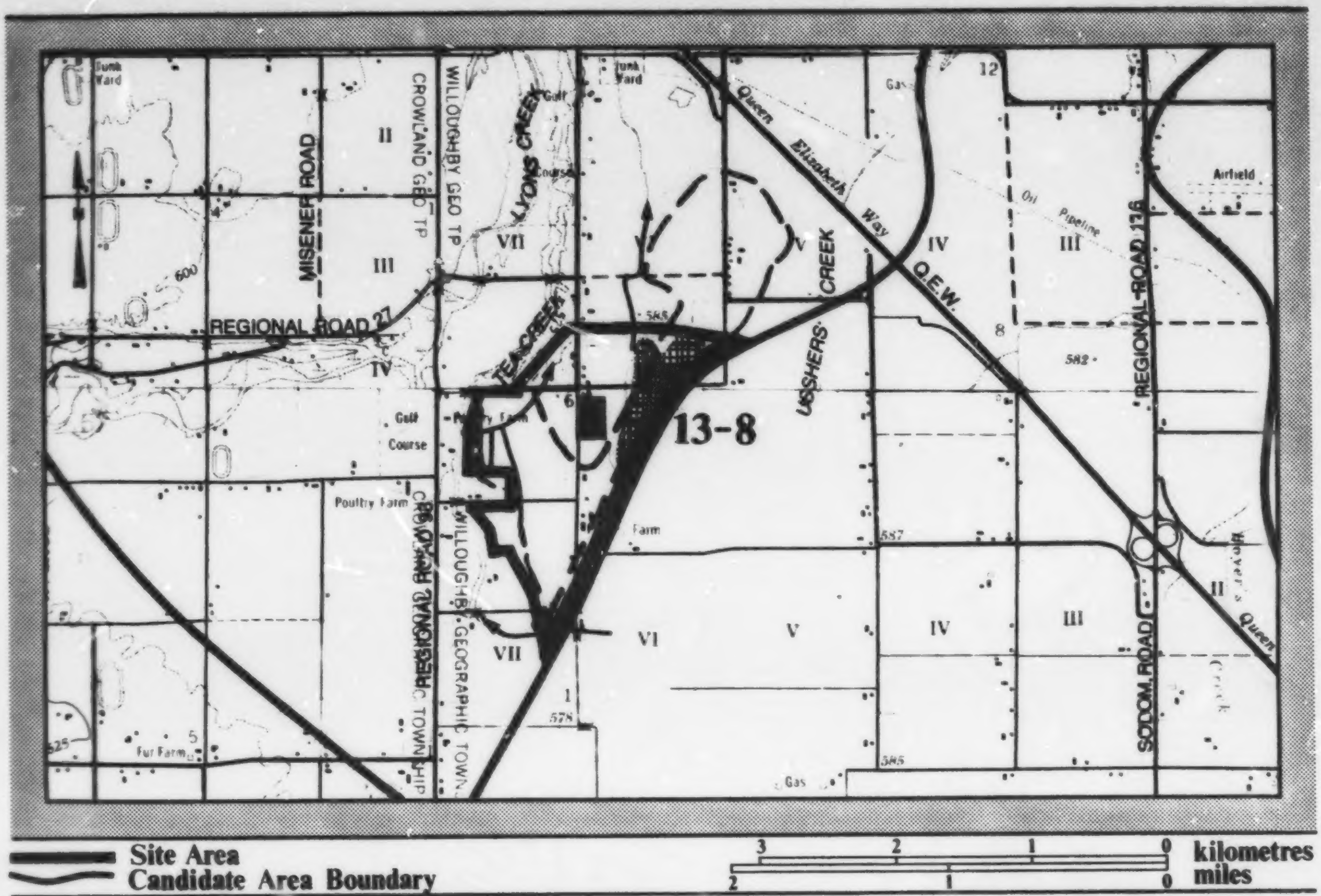
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-11E


Junk Yard
II
CROWLAND GEO TP
WILLOUGHBY GEO TP
LYONS CREEK
Golf Course
Junk Yard
Queen Elizabeth Way
12
Gas
Airfield
Oil Pipeline
MISENER ROAD
III
VII
V
CREEK
IV
III
REGIONAL ROAD 116
600
Q.E.W.
REGIONAL ROAD 27
TEA CREEK
585
USSHERS
8
582
IV
6
Golf Course
Poultry Farm
13-8
Poultry Farm
REGIONAL ROAD 98
CROWLAND TOWNSHIP
WILLOUGHBY GEOGRAPHIC TOWN
Farm
587
II
VI
V
IV
III
VII
SODOM ROAD
Queen
Creek
1
578
625
Fur Farm
5
585
Gas
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 13-8 occurs in the eastern portion of the site area. Agricultural exclusionary factor Class 3 or 4 row crops or corn-wheat is found within the site area boundaries. Stream courses and a floodplain are found along the west border of the site area and crosses the very south edge of the site area.

The constraint-free area is not large enough to accommodate a landfill or integrated facility.

Adjacent Constraints:

Expansion is constrained by SEU 13-8 and Class 1 or 2 mixed, cereal-grain, hay-grain or hay (good quality) to the north; Class 1 or 2 cereal grain, hay-grain or hay (good quality), Class 3 row crops or corn-wheat and a floodplain to the west; a floodplain to the south; and a candidate area boundary to the east.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☑
4. land use ☐
5. agriculture ☑
6. social ☐
7. transportation ☐

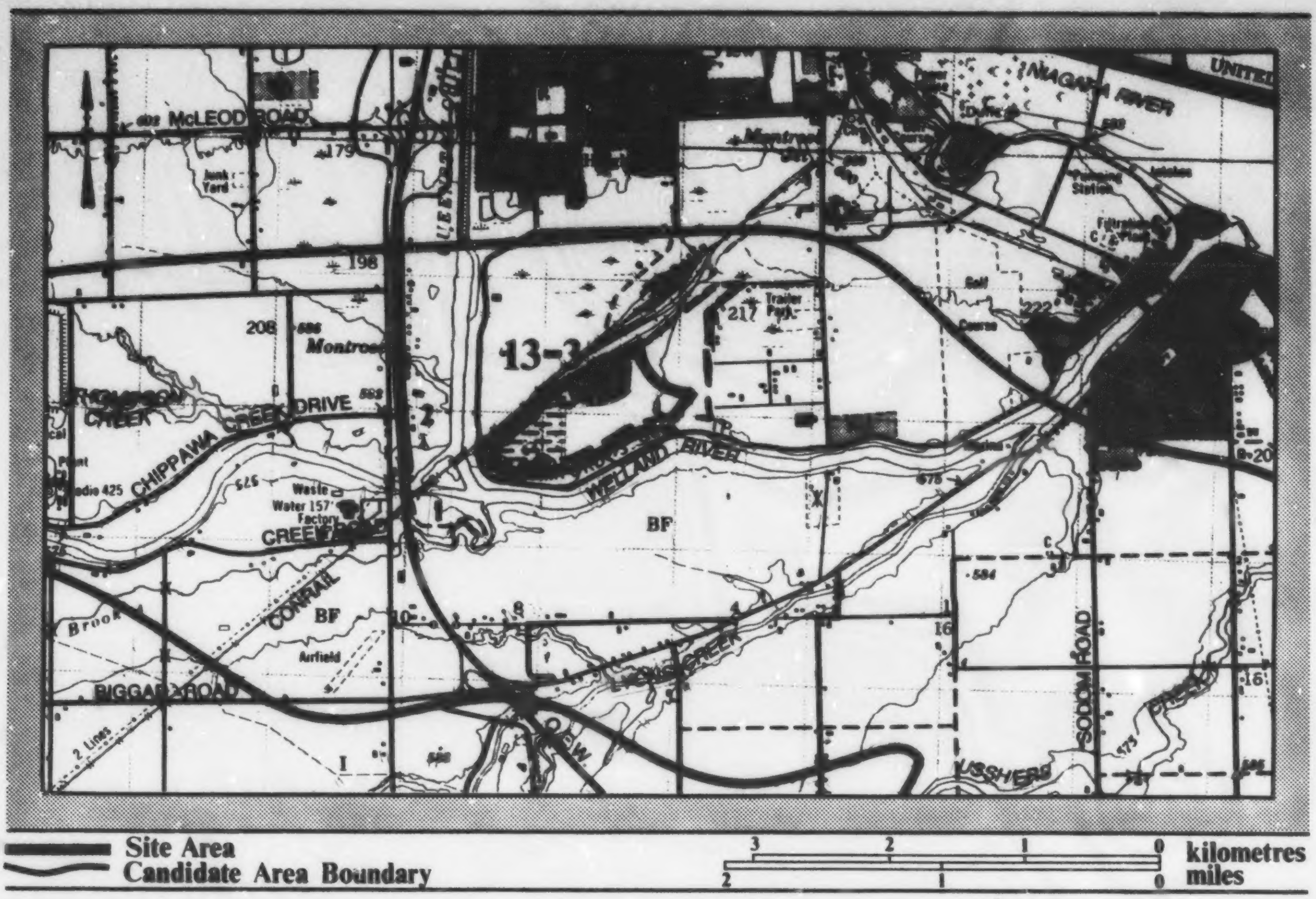
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

LF-12E


McLEOD ROAD
179
Junk Yard
198
208
Montrose
THOMPSON CREEK
CHIPPAWA CREEK DRIVE
Radio 425
2
13-3
217
Trailer Park
WELLAND RIVER
NIAGARA RIVER
UNITED
Pumping Station
Filtration Plant
Golf Course
222
Waste Water Factory
CREEK ROAD
CONRAIL
BF
Airfield
Brook
BIGGAR ROAD
2 Lines
LYONS CREEK
QEW
SODOM ROAD
USSHERS
16
1
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 13-3 occurs in the north portion of the site area and an area of spoil occurs in the west portion. In addition, the site area is located southwest to a residential area and to the south of the Niagara Falls urban area.

The following recreation and/or community features were identified adjacent to the site area:

1 - Grassy Brook Park
2 - Niagara Meadows Holiday Travel Campground

The site area is designated industrial. It could be combined with LF-1E or LF-3E. However, there are other industrially designated site areas in the same vicinity which could be associated with LF-1E or LF-3E.

Adjacent Constraints:

Expansion is restricted by a ConRail rail line and SEU 13-3 to the north and west; a floodplain to the south; and a residential area to the northeast.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☑
4. land use ☑
5. agriculture ☐
6. social ☑
7. transportation ☐

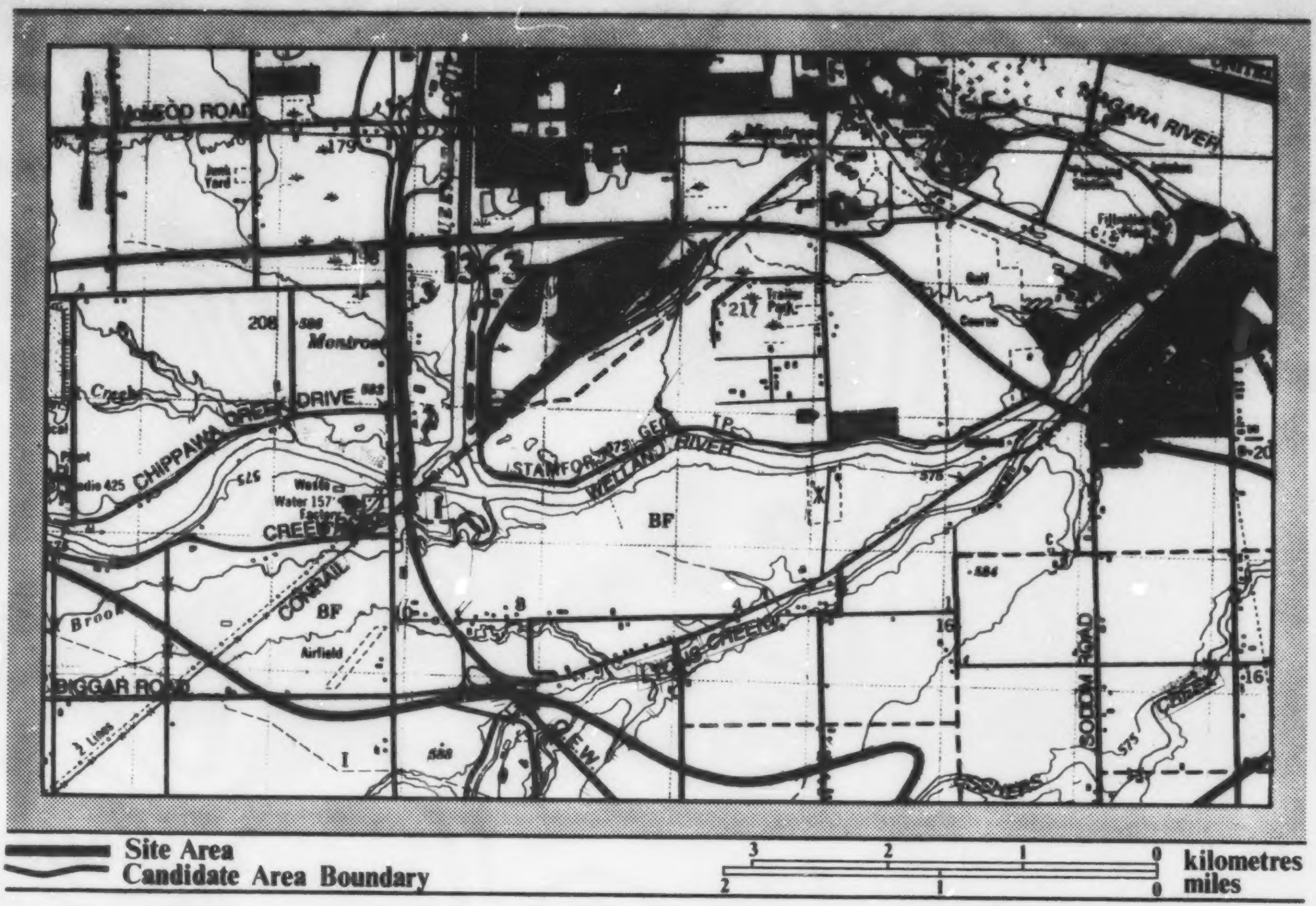
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☑
11. access routes ☑

PI-1E


McLEOD ROAD
NIAGARA RIVER
Montrose
13-3
208
217
Trailer Park
Golf Course
CHIPPAWA CREEK DRIVE
Creek
STAMFORD
WELLAND RIVER
Waste Water
Factory
CREEK
CONRAIL
BF
Brook
Airfield
BIGGAR ROAD
LYONS CREEK
SODOM ROAD
CREEK
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 13-3 occurs in the north portion of the site area. A spoil pile occurs in the south portion of the site. Residential areas are adjacent to the west (Montrose) and north (Niagara Falls).

The following community and/or recreation features were identified adjacent to the site area:

1. Grassy Brook Park;
2. Niagara Meadows Holiday Travel Park;
3. Niagara Falls Art Gallery: Gallery and Museum.

The site is industrially designated. It could be combined with LF-1E or LF-3E. However, there are other industrially designated site areas in the same vicinity which could be associated with LF-1E or LF-3E. These site areas had more direct access and fewer potential access route impacts to the two landfill site areas than PI-2E. It was therefore decided to drop PI-2E from further consideration.

Adjacent Constraints:

Expansion of the site area is constrained by a ConRail rail line to the south and east; to the north by a candidate area boundary and a residential area (Niagara Falls); and to the west by a floodplain and a residential area (Montrose).

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☑
4. land use ☑
5. agriculture ☐
6. social ☑
7. transportation ☐

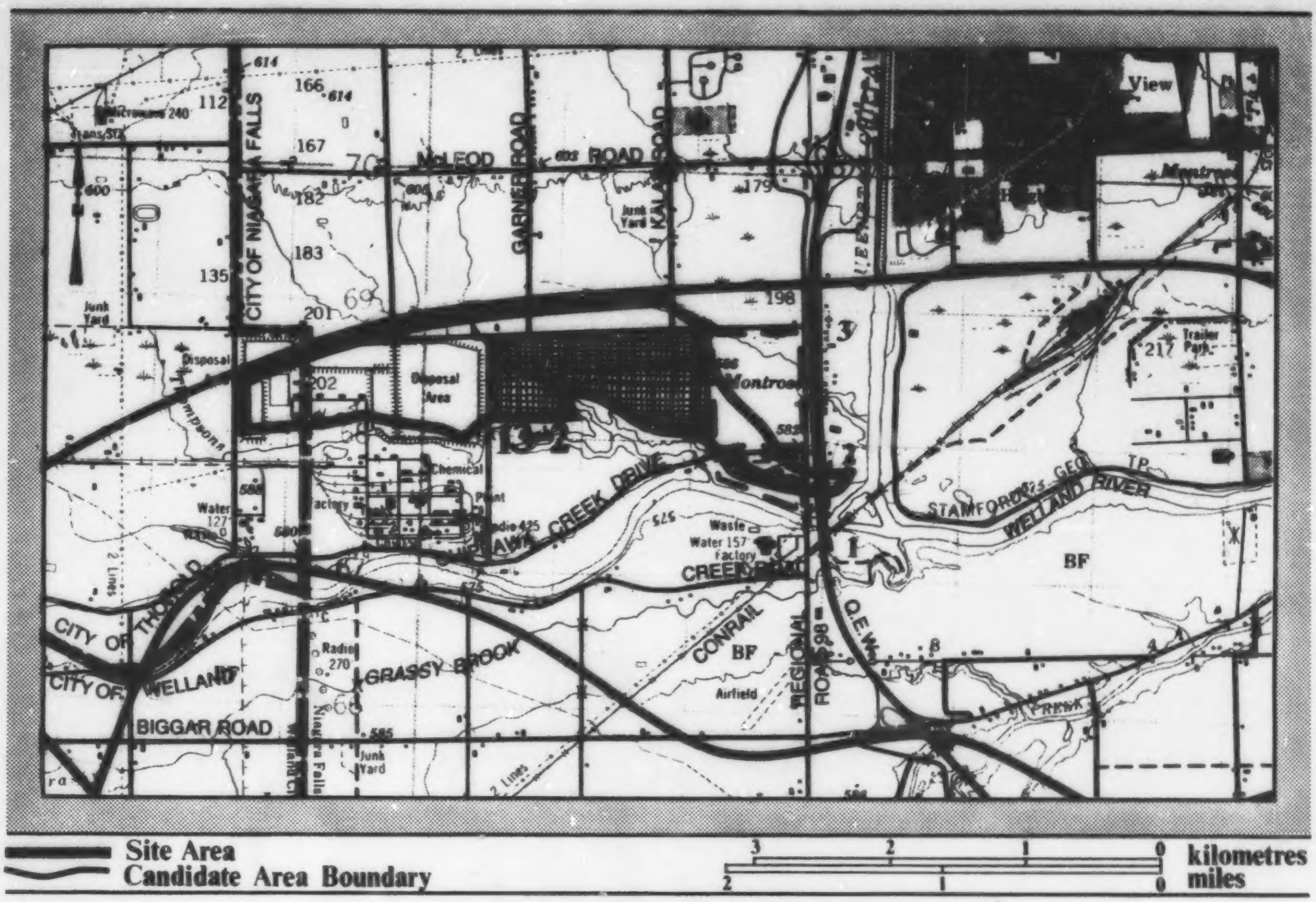
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☑
11. access routes ☑

PI-2E


McLEOD ROAD
GARNER ROAD
KALAR ROAD
CITY OF NIAGARA FALLS
Montrose
13-2
GRASSY BROOK
CONRAIL
REGIONAL ROAD 98
Q.E.W.
CITY OF THOROLD
CITY OF WELLAND
BIGGAR ROAD
CREEK ROAD
WELLAND RIVER
STAMFORD TP.
BF
Disposal Area
Chemical Plant
Factory
Waste Water
Junk Yard
Trailer Park
Airfield
View
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 13-2. An existing industrial facility occurs in the west portion of the site area. A residential area (Montrose) is located adjacent to the east side of the site area. Niagara Region Roads 63 and 98 and the Queen Elizabeth Way cross the southern portion of the site area. A stream course crosses the site area. A spoil pile occurs in the southeast portion of the site area. Niagara Falls is located approximately 500 m from the site area study area.

The following community and/or recreation features were identified adjacent to the site area:

1. Grassy Brook Park;
2. Niagara Meadows Holiday Travel Park;
3. Niagara Falls Art Gallery: Gallery and Museum.

The remaining constraint-free area is not sufficiently large to accommodate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Site area expansion is restricted by a candidate area boundary to the north; a floodplain to the east and south; Niagara Region Road 70 to the west; and a residential area (Montrose) to the east.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☒
5. agriculture ☐
6. social ☒
7. transportation ☒

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

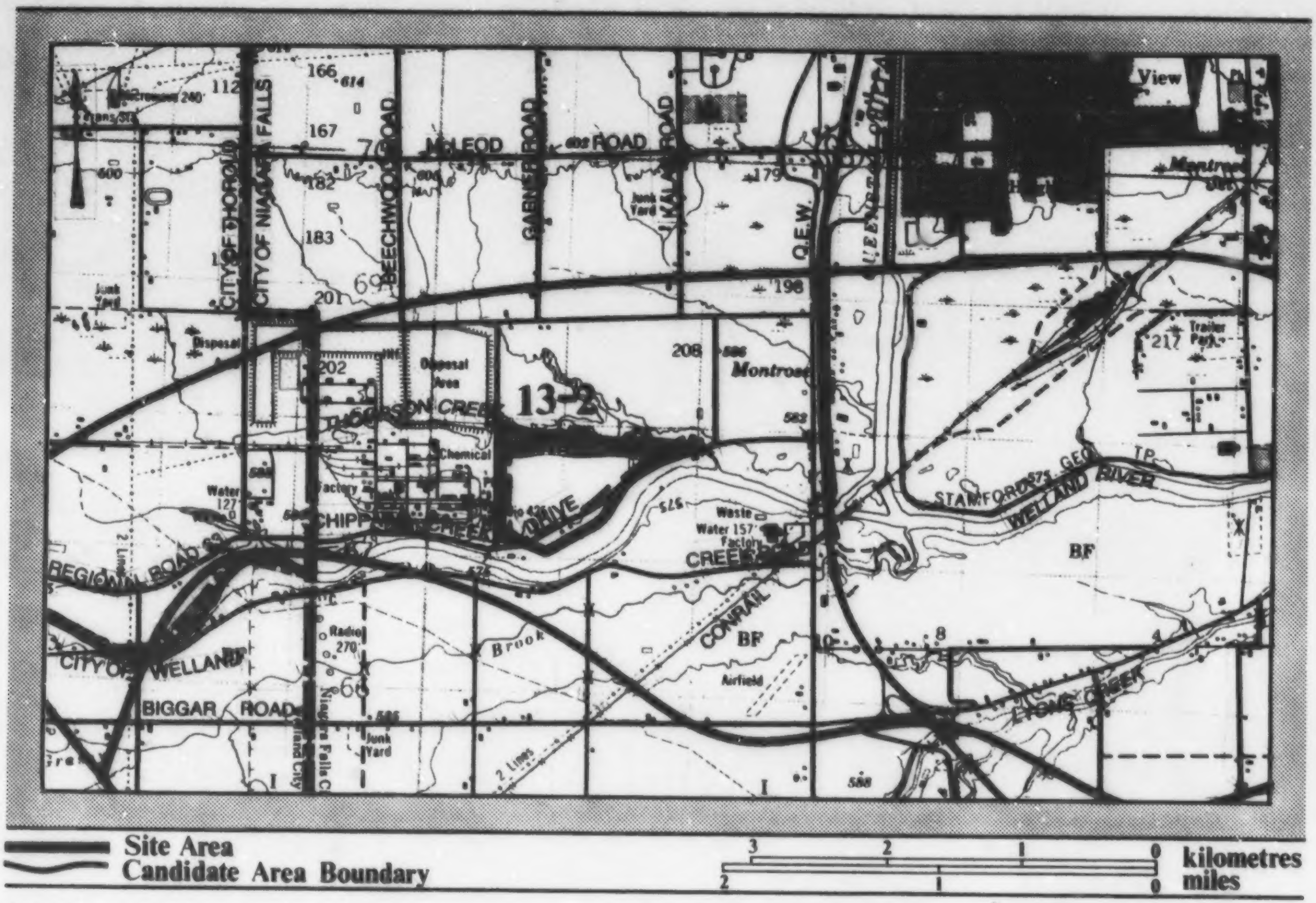
10. travel distance ☐
11. access routes ☐

PI-3E

Site Constraints:

Continued

Consideration was given to locating the operating area of the facility in the remaining unconstrained area. However, the technical buffer extended across major transportation facilities and into constrained areas. It was therefore decided to drop the site area from further consideration.


MCLEOD ROAD
CITY OF THOROLD
CITY OF NIAGARA FALLS
BEECHWOOD ROAD
GARNER ROAD
KALAR ROAD
Q.E.W.
View
Junk Yard
Disposal
Disposal Area
13-2
THOMPSON CREEK
Chemical
Factory
Water 127
CHIPPAWA CREEK
DRIVE
Montrose
Waste Water 157
Factory
CREEK
Trailer Park
STAMFORD GEO. TP.
WELLAND RIVER
BF
REGIONAL ROAD 63
CONRAIL
Radio 270
CITY OF WELLAND
BIGGAR ROAD
Niagara Falls City
Junk Yard
Airfield
Brook
2 Lines
LYONS CREEK
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 13-2 occurs in the north portion of the site area. Niagara Region Road 63 crosses the south portion of the site area.

The site area is industrially designated. It could be associated with LF-1E or LF-3E. Site areas were identified which had more direct access and fewer potential access route impacts to the two landfill site areas than PI-4E. It was therefore decided to drop PI-4E from further consideration.

Adjacent Constraints:

Expansion is restricted by a floodplain to the north, east and south, and by an existing industrial facility to the west.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

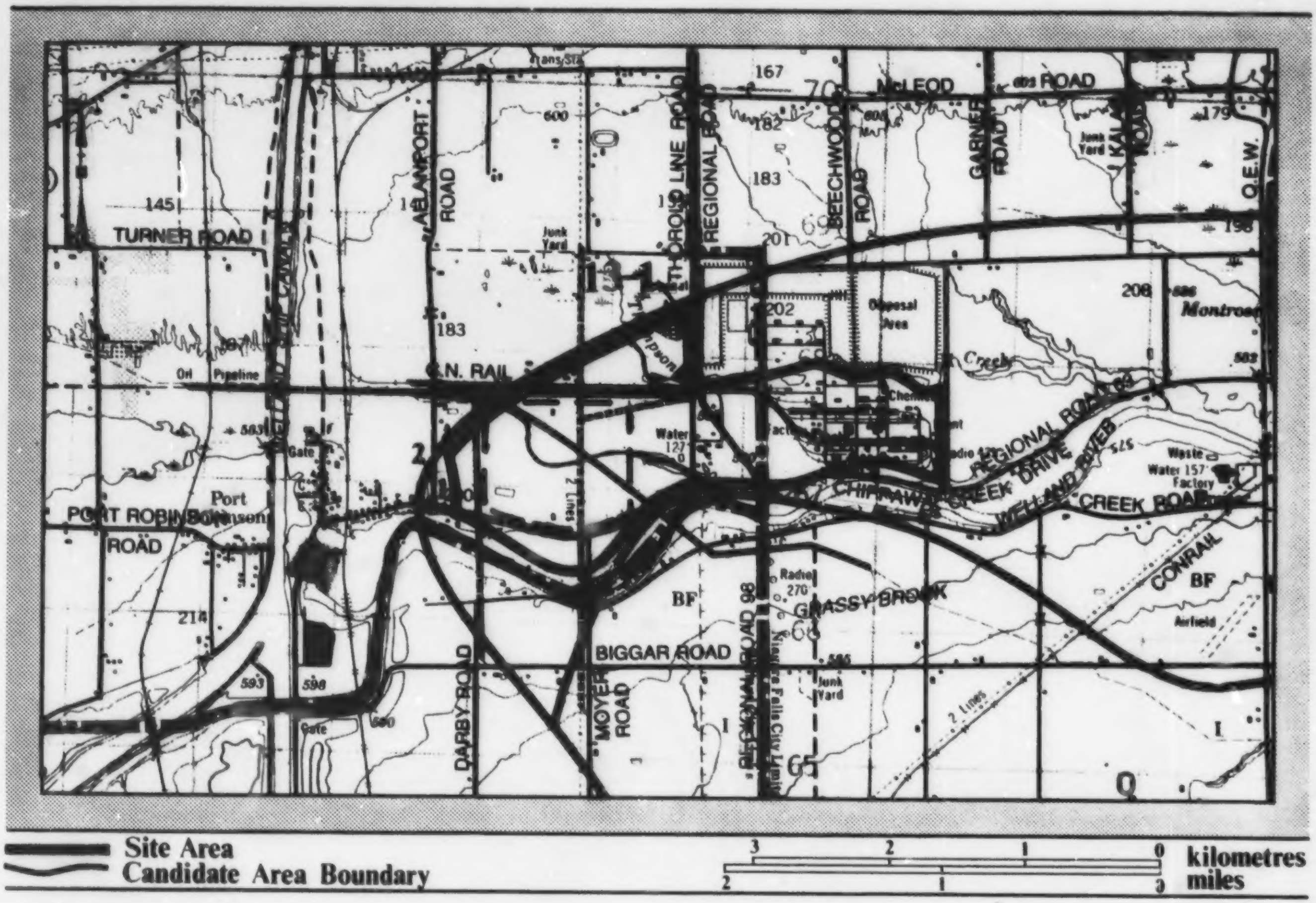
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☒
11. access routes ☒

PI-4E


TURNER ROAD
PORT ROBINSON ROAD
Port Robinson
ALLANPORT ROAD
THOROLD LINE ROAD
REGIONAL ROAD
BEECHWOOD ROAD
McLEOD
GARNER ROAD
KALAR ROAD
Q.E.W.
C.N. RAIL
Oil Pipeline
Disposal Area
Chemical
Junk Yard
REGIONAL ROAD 63
CHIPPAWA CREEK DRIVE
WELLAND RIVER
CREEK ROAD
CONRAIL
GRASSY BROOK
BIGGAR ROAD
DARBY ROAD
MOYER ROAD
REGIONAL ROAD 98
Montrose
Waste Water Factory
Airfield
Gate
Water
Radio
2 Lines
BF
1
2
Site Area
Candidate Area Boundary
kilometres
miles
3
2
1
0

Site Constraints:

The site area is crossed by an Ontario Hydro transmission line, an Interprovincial Pipelines Limited high pressure oil pipeline, a Canadian National Railways rail line, two stream courses, three Consumers' Gas pipelines and Niagara Region Roads 63 and 70. An existing industrial facility is located in the east portion of the site area and a residential area (Port Robinson) is adjacent to the west side of the site area. SEU 13-1 occurs in the north portion of the site area.

The following community and recreation features were identified adjacent to the site area:

1. City of Thorold Cemetery;
2. Centennial Park (undeveloped).

Portions of the site area are industrially designated. The site area could be associated with LF-IE or LF-3E. Site areas were identified which had more direct transportation access and fewer potential access route impacts to the two landfill areas than PI-5E. It was therefore decided to drop Pl-5E from further consideration.

Adjacent Constraints:

Expansion is restricted by a candidate area boundary to the north; an existing industrial facility to the east; to the south by a floodplain; and to the west by a residential area (Port Robinson).

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☒
4. land use ☒
5. agriculture ☐
6. social ☒
7. transportation ☒

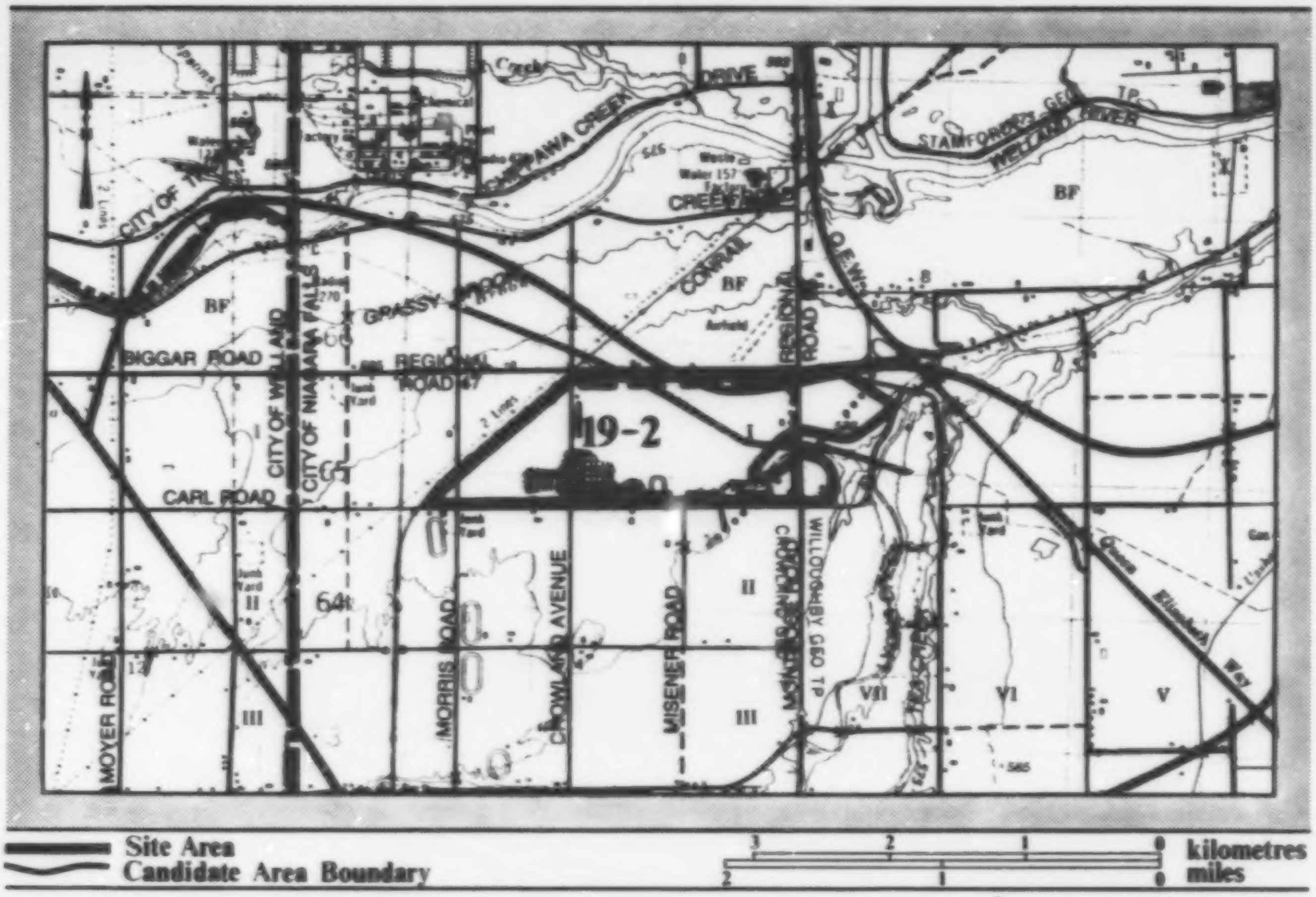
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☒
11. access routes ☒

PI-5E


DRIVE
CHIPPAWA CREEK
CREEK ROAD
STAMFORD GEO TP
WELLAND RIVER
BF
CONRAIL
Q.E.W.
CITY OF THOROLD
BIGGAR ROAD
CITY OF WELLAND
CITY OF NIAGARA FALLS
GRASSY BROOK
REGIONAL ROAD 47
REGIONAL ROAD
19-2
CARL ROAD
MOYER ROAD
MORRIS ROAD
CROWLAND AVENUE
MISENER ROAD
CROWLAND GEO TP
WILLOUGHBY GEO TP
I
II
III
V
VI
VII
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 19-2 occurs in the south portion of the site area. Niagara Region Road 98 crosses the east portion of the site area. The site area is also crossed by an Interprovincial Pipeline Limited high pressure oil pipeline and a Bell line.

The site area is designated agricultural and open space. A number of industrially designated site areas are located in the same vicinity. Many do not have identified with them the major constraints associated with PI-6E. It was therefore decided to drop PI-6E from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a ConRail rail line and an Ontario Hydro transmission line to the north and west; a floodplain to the east; and SEU 19-2 and Class 3 or 4 row crops or corn-wheat to the west and Class 1 or 2 row crops or corn-wheat and mixed cereal, grain, hay-grain or hay (good quality) to the south.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

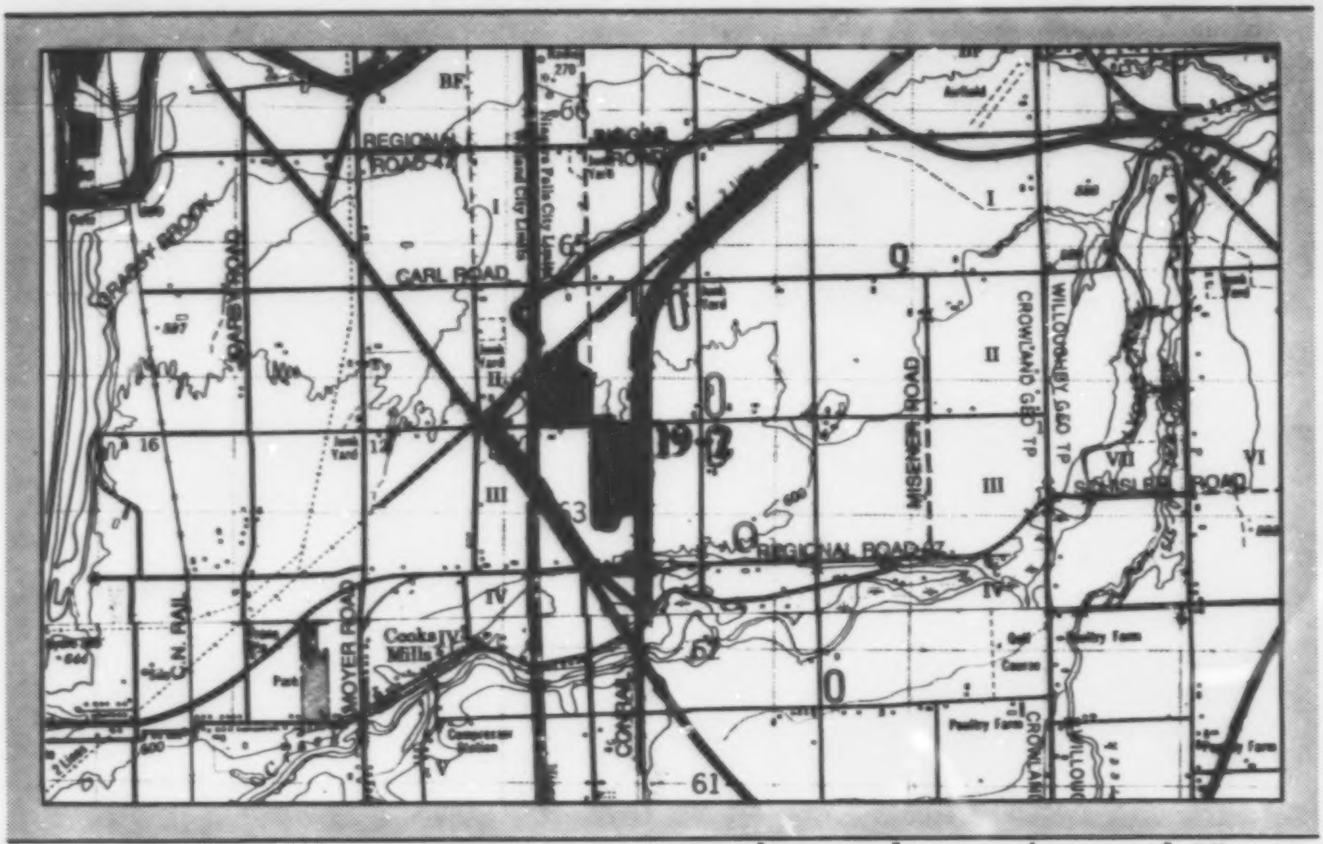
Compatibility Screen

8. existing land use ☑
9. designated land use ☑

System Screen

10. travel distance ☐
11. access routes ☐

PI-6E


BF
REGIONAL ROAD 47
Niagara Falls City Limits
66
65
63
62
61
CARL ROAD
GRASSY BROOK
DARBY ROAD
16
I
II
III
IV
V
VI
VII
19-2
MISENER ROAD
CROWLAND GEO TP
WILLOUGHBY GEO TP
SCHISLER ROAD
REGIONAL ROAD 47
C.N. RAIL
MOYER ROAD
Cooks Mills
CONRAIL
Compressor Station
Golf Course
Poultry Farm
CROWLAND
WILLOUGHBY

Site Area

Candidate Area Boundary

3 2 1 0 kilometres

2 1 0 miles

Site Constraints:

The site area is irregularly shaped and conflicts with SEU 19-2. An Ontario Hydro transmission line and Niagara Region Roads 27 and 47 cross the site area.

There is insufficient constraint-free area in which to locate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operations area of the facility within the unconstrained area. However, the technical buffer extended across major transportation facilities or into constrained areas. It was therefore decided to drop the site area from further consideration.

Adjacent Constraints:

Expansion of site area boundaries is restricted by a ConRail rail line and SEU 19-2 to the east; a stream course to the north and west; a residential area (Cooks Mills) and a candidate area boundary to the south and west; and a floodplain and SEU 13-6 to the south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

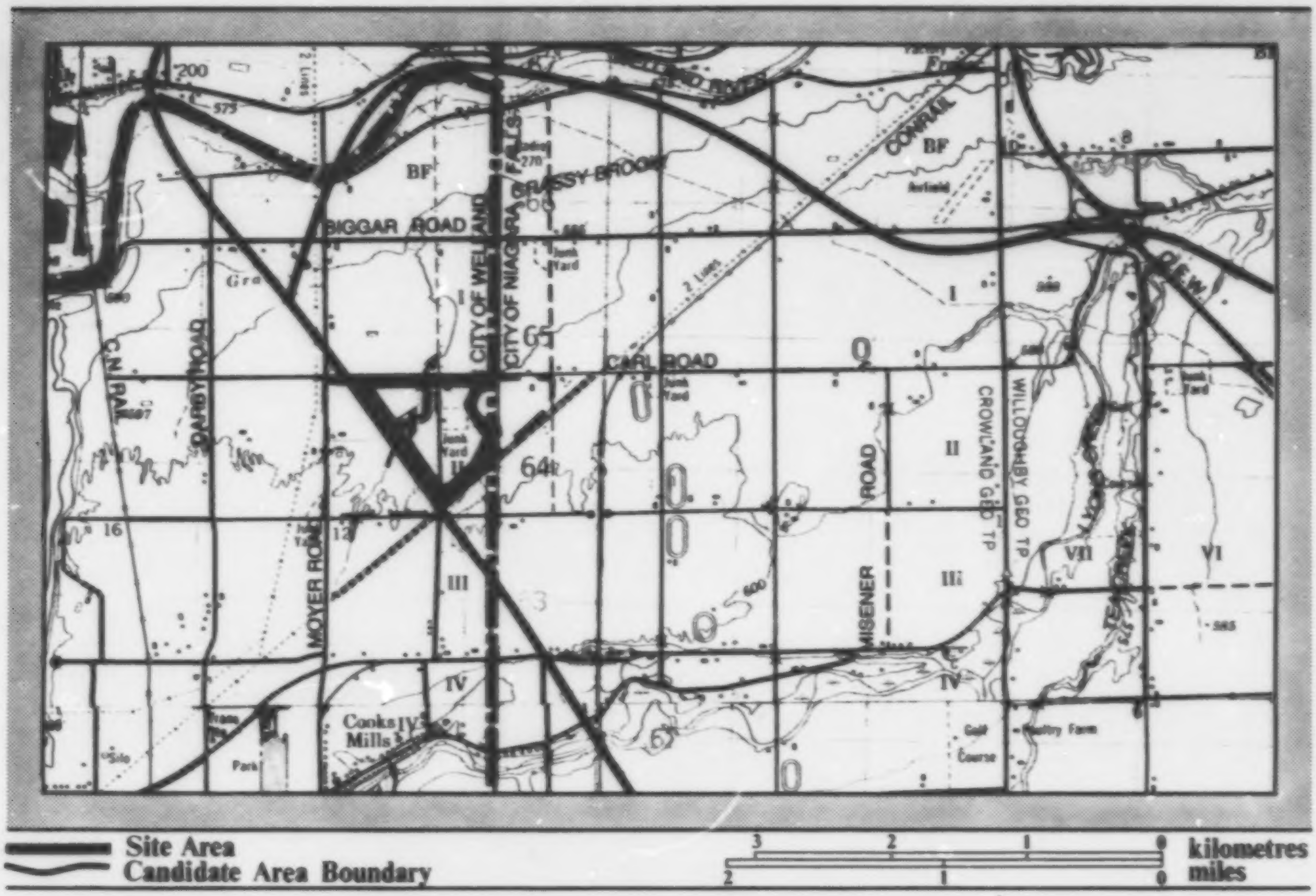
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-7E



BIGGAR ROAD
CARL ROAD
GRASSY BROOK
CONRAIL
QEW
C.N. RAIL
DARBY ROAD
MOYER ROAD
MISENER ROAD
CITY OF WELLAND
CITY OF NIAGARA FALLS
CROWLAND GEO TP
WILLOUGHBY GEO TP
Cooks Mills
Junk Yard
Golf Course
Poultry Farm
Park
BF
I
II
III
IV
VI
VII
64
65
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A floodplain crosses the site area. An Ontario Hydro transmission line crosses the south portion of the site area.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility in the constraint-free area. However, the technical buffer extended outside the candidate area and into constrained areas. It was therefore decided to drop the site area from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a candidate area boundary to the south and west; a stream course and SEU 19-2 to the east; and Carl Road, SEU 19-1 and the site area boundary of PI-30E to the north.

Suitability Screen

1. size ●
2. physical resources ●
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

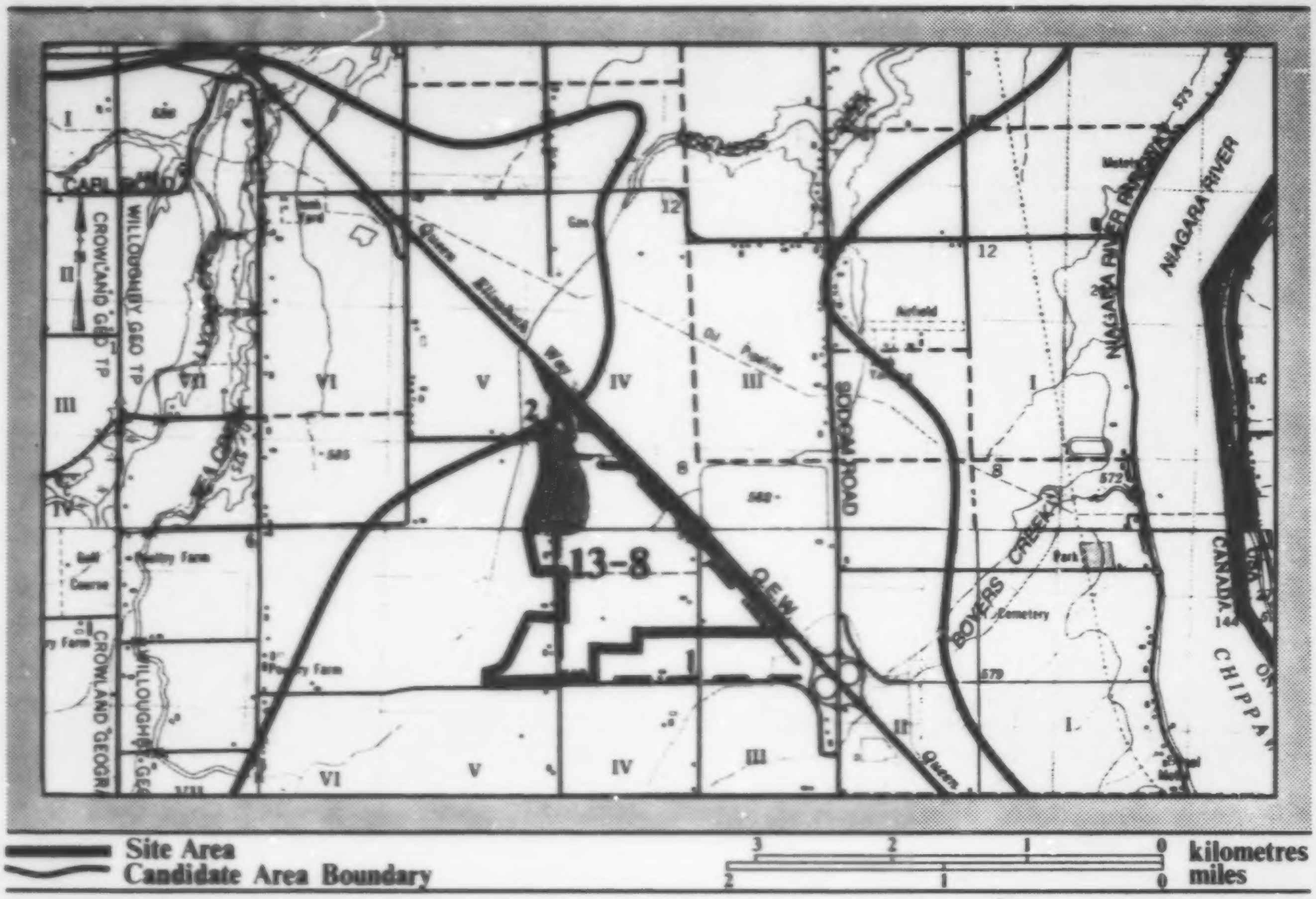
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-8E


CARL ROAD
CROWLAND GEO TP
WILLOUGHBY GEO TP
Queen Elizabeth Way
Q.E.W.
13-8
1
2
12
8
I
II
III
IV
V
VI
VII
SODOM ROAD
BOYERS CREEK
NIAGARA RIVER PARKWAY
NIAGARA RIVER
CANADA
CHIPPA
Airfield
Cemetery
Park
Golf Course
Poultry Farm
572
579
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

SEU 13-8 occurs in the north portion of the site area.

The following recreation and/or community features were identified within or adjacent to the site area:

1. Willoughby United Church and Cemetery;
2. Cherith Brook Retreat and Outreach Centre.

The site area is agriculturally designated. It could be associated with LF-2E or LF-3E. However, there are industrially designated site areas located in the same vicinity. Many of these site areas are located with more direct access to the potential landfill site areas. It was therefore decided to drop PI-9E from further consideration.

Adjacent Constraints:

Expansion is restricted by a floodplain and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the west; a floodplain and SEU 13-8 to the north; the Queen Elizabeth Way to the east; and Class 3 or 4 row crops or corn-wheat to the south.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☐

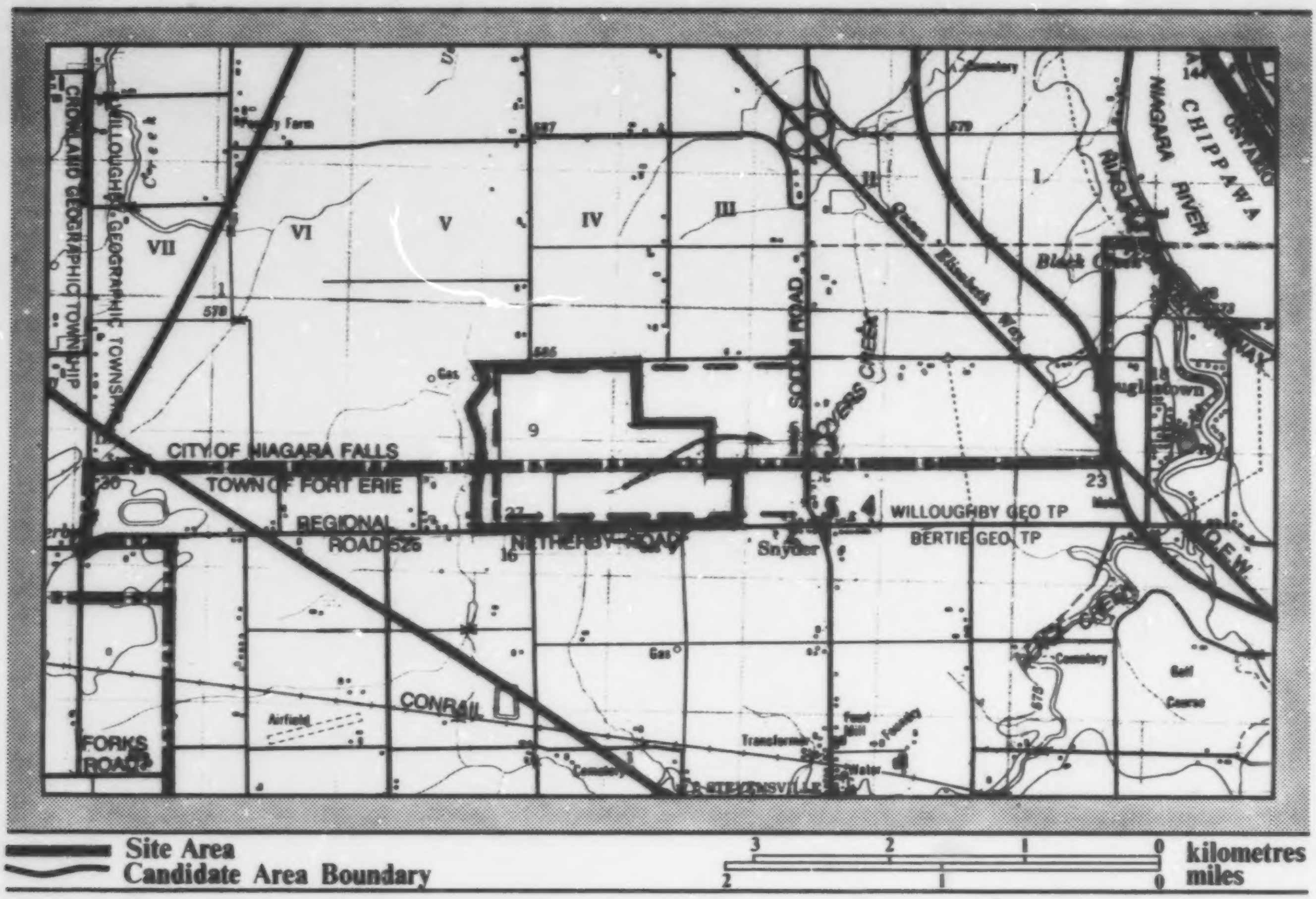
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-9E


CROWLAND GEOGRAPHIC TOWNSHIP
WILLOUGHBY GEOGRAPHIC TOWNSHIP
VII
VI
V
IV
III
II
I
NIAGARA RIVER
CHIPPAWA
ONTARIO
Black Creek
Queen Elizabeth Way
SODOM ROAD
LYONS CREEK
9
CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
REGIONAL ROAD 526
27
NETHERBY ROAD
16
Snyder
WILLOUGHBY GEO TP
BERTIE GEO TP
23
Q.E.W.
Gas
CONRAIL
Airfield
FORKS ROAD
Transformer
Water
Cemetery
Golf Course
STEVENSVILLE
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

A stream course crosses the southeastern portion of the site area.

The following community and/or recreation features were identified adjacent to the site area:

1. St. John's United Church;
2. St. John's Lutheran Church;
3. St. John's Lutheran Cemetery;
4. St. John's Elementary School;
5. St. Joseph's Hall, Church, Rectory and Cemetery.

Snyder is immediately adjacent to the east.

The site area is designated agricultural, and rural and village community. It could be associated with LF-1E or LF-3E. However, there are other site areas which have industrial designations in the same vicinity. Many of these site areas are located with more direct access to the potential landfill sites. It was therefore decided to drop PI-10E from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the north and east; Class 3 or 4 row crops or corn-wheat to the north; a floodplain and SEU 13-8 to the west; by Niagara Region Road 25 to the south; by a residential area (Snyder) to the east.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☒
5. agriculture ☐
6. social ☒
7. transportation ☐

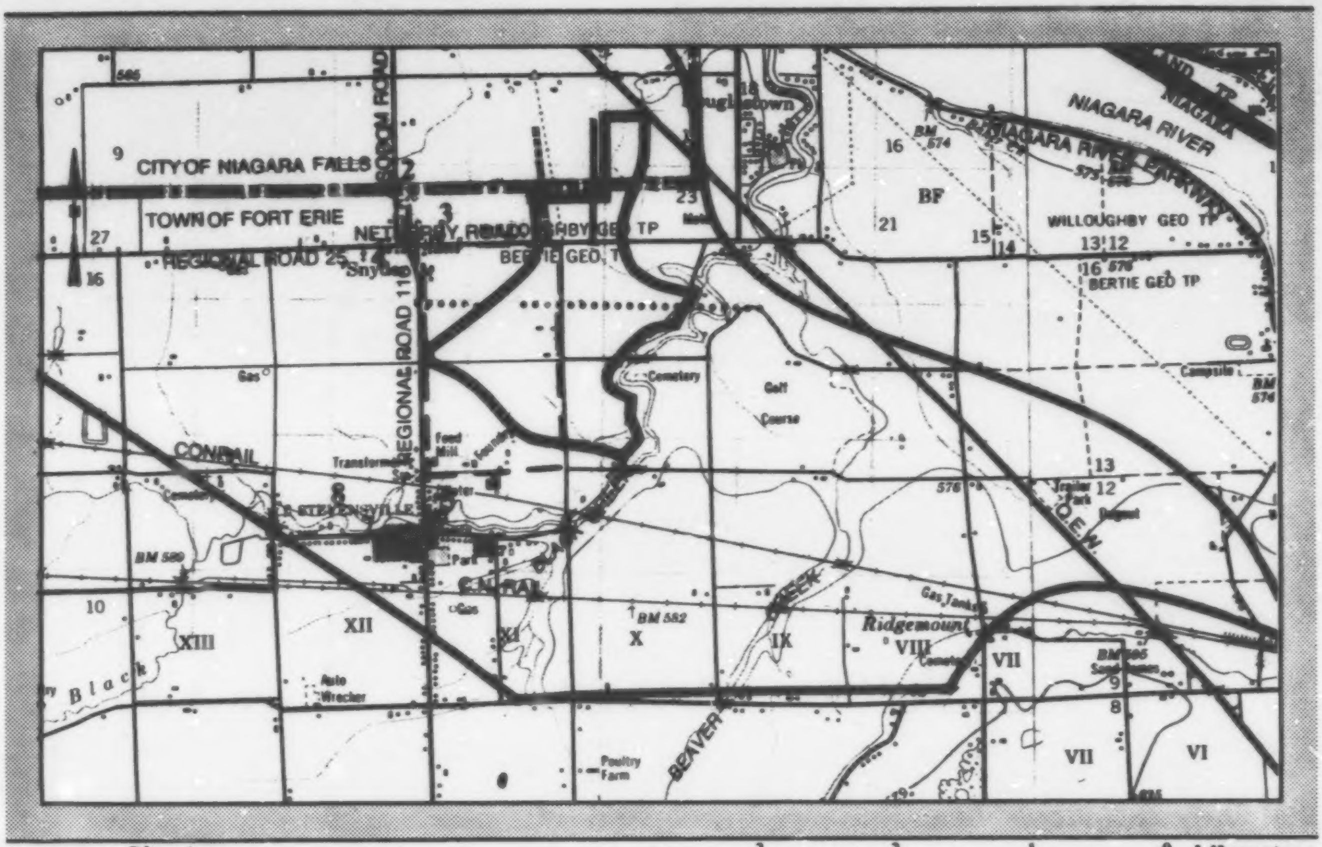
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-10E


CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
REGIONAL ROAD 25
REGIONAL ROAD 116
NIAGARA RIVER
NIAGARA RIVER PARKWAY
WILLOUGHBY GEO TP
BERTIE GEO TP
Douglastown
Snyder
STEVENSVILLE
CONRAIL
Cemetery
Golf Course
Ridgemount
Black
BEAVER
XIII
XII
XI
X
IX
VIII
VII
VI
BF
Site Area
Candidate Area Boundary
kilometres
miles

Site Constraints:

An Ontario Hydro transmission line, a Bell line and trunk sewer line cross the north portion of the site area.

The following recreation and/or community features were identified within or adjacent to the site area:

1. St. Joseph's Cemetery, Church, Hall, and Rectory;
2. St. John's Lutheran Cemetery;
3. St. Joseph's Elementary School;
4. St. John's Lutheran Church;
5. Stevensville Fire Hall;
6. Beam Cemetery;
7. Stevensville Mini Park;
8. United Empire Loyalist Memorial Conservation Area.

Snyder and Stevensville are within or immediately adjacent to the site area.

The site area is partially designated agricultural. The south portion of the site area is industrially designated. However, it is adjacent to, and partially within, a residential area (Stevensville).

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the north; residential and commercial areas (Stevensville, Snyder and Douglastown) to the northeast, northwest, west and south; Niagara Region Road 116 to the west; and a floodplain to the east.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☐
4. land use ●
5. agriculture ☐
6. social ●
7. transportation ●

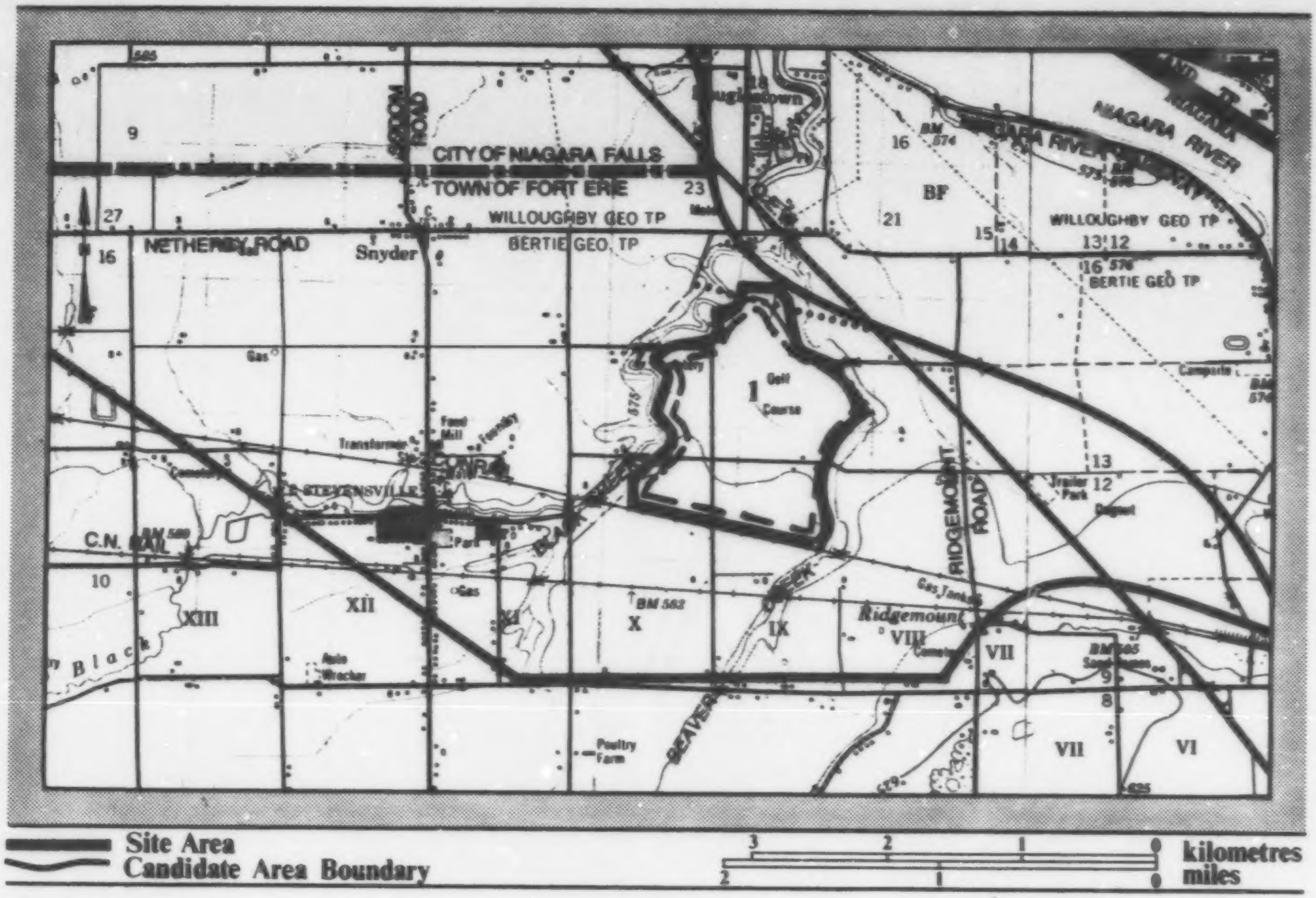
Compatibility Screen

8. existing land use ●
9. designated land use ●

System Screen

10. travel distance ☐
11. access routes ☐

PI -11E


CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
WILLOUGHBY GEO TP
BERTIE GEO TP
NETHERBY ROAD
Snyder
STEVENSVILLE
C.N. RAIL
RIDGEMOUNT ROAD
Ridgemount
NIAGARA RIVER
Douglastown
BF
1 Golf Course
Transformer
Feed Mill
Foundry
Cemetery
Trailer Park
Poultry Farm
Auto Wrecker
Black
BEAVER
CREEK
X
XI
XII
XIII
IX
VIII
VII
VI
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The following recreation and/or community features were identified within or adjacent to the site area:

1. International Country Club;
2. Cemetery (name unknown).

Stevensville is approximately 300m to the east and Douglastown is approximately 500m to the west of the site area.

The site area is designated rural and open space. It could be associated with LF-1E or LF-3E. However, there are site areas which are industrially designated in the same vicinity. Many of these site areas have more direct access to the potential landfill sites. It was therefore decided to drop PI-12E from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a floodplain to the east and west; a residential and commercial area (Stevensville) to the west; a candidate area boundary to the north; and a ConRail rail line to the south.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☐
4. land use ☑
5. agriculture ☐
6. social ☑
7. transportation ☐

Compatibility Screen

8. existing land use ☑
9. designated land use ☑

System Screen

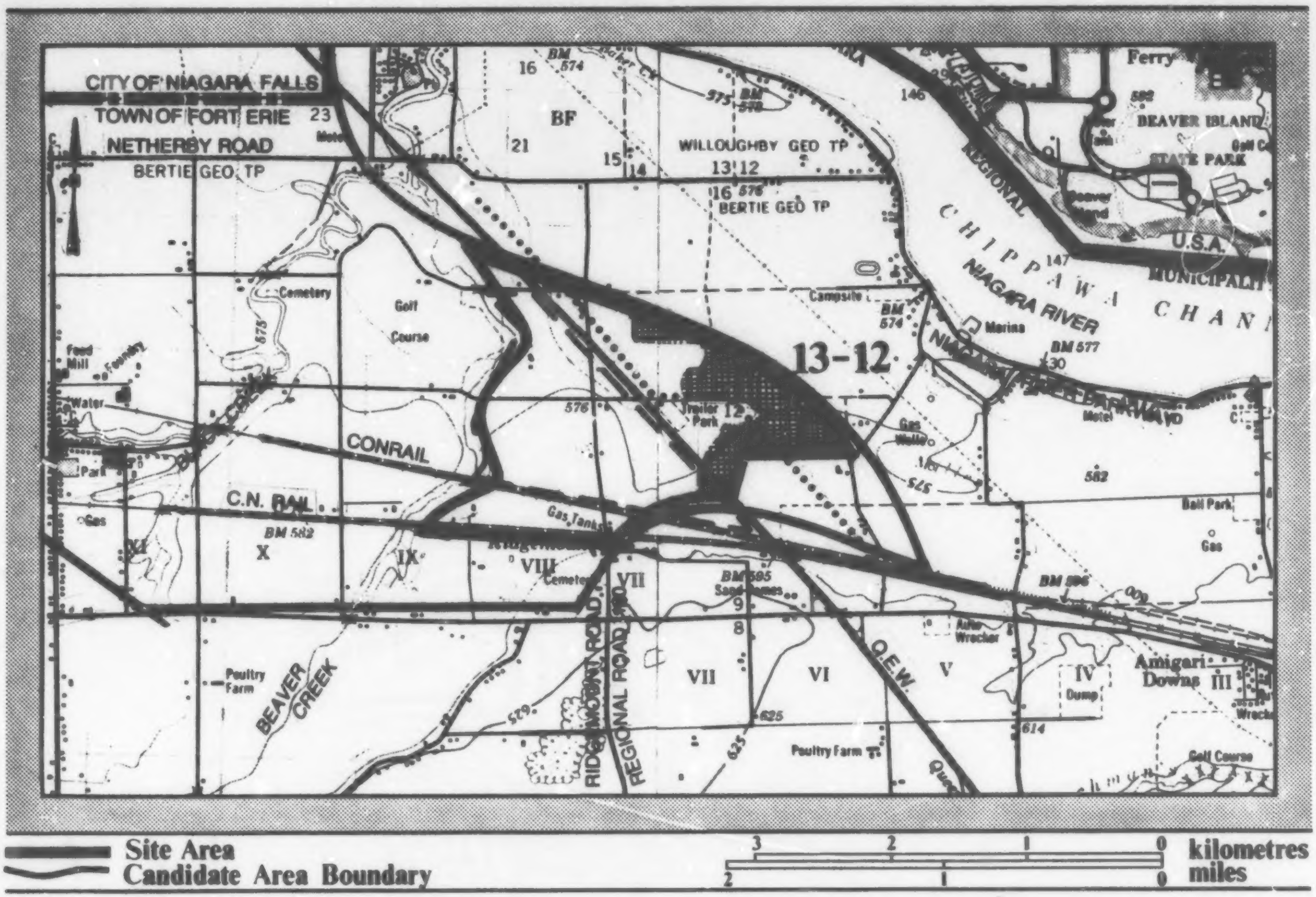
10. travel distance ☐
11. access routes ☐

PI-12E

Site Constraints:

Continued

The site area could be associated with LF-1E or LF-3E. However, there are site areas which are industrially designated located in the same vicinity. Many of these site areas are located with more direct access than PI-11E. Therefore it was decided to drop PI-11E from further consideration.


CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
NETHERBY ROAD
BERTIE GEO TP
WILLOUGHBY GEO TP
BERTIE GEO TP
BF
13-12
CHIPPAWA CHANNEL
NIAGARA RIVER
REGIONAL
BEAVER ISLAND STATE PARK
U.S.A.
MUNICIPALITY
Ferry
Cemetery
Golf Course
Feed Mill
Foundry
Water
Park
Gas
CONRAIL
C.N. RAIL
BM 582
Gas Tanks
Trailer Park
Campsite
Marina
BM 577
Motel
582
Ball Park
Gas
BM 596
Auto Wrecker
Amigari Downs
Dump
Golf Course
Poultry Farm
BEAVER CREEK
RIDGEMOUNT ROAD
REGIONAL ROAD 116
Q.E.W.
Poultry Farm
X
IX
VIII
VII
VII
VI
V
IV
III
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 13-12 in the east. It is also crossed by the Queen Elizabeth Way and a ConRail rail line.

The site area has a rural designation. It could be associated with LF-1E or LF-3E. However, there are site areas which are designated industrial located in the same vicinity. Many of these site areas have more direct access to the potential landfills than PI-13E. It was therefore decided to drop PI-13E from further consideration.

Adjacent Constraints:

Expansion is constrained by a candidate area boundary to the north, south and east; a Canadian National Railways rail line, and Class 3 or 4 row crops or corn-wheat to the northwest and Class 3 or 4 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the south; and a floodplain to the west.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

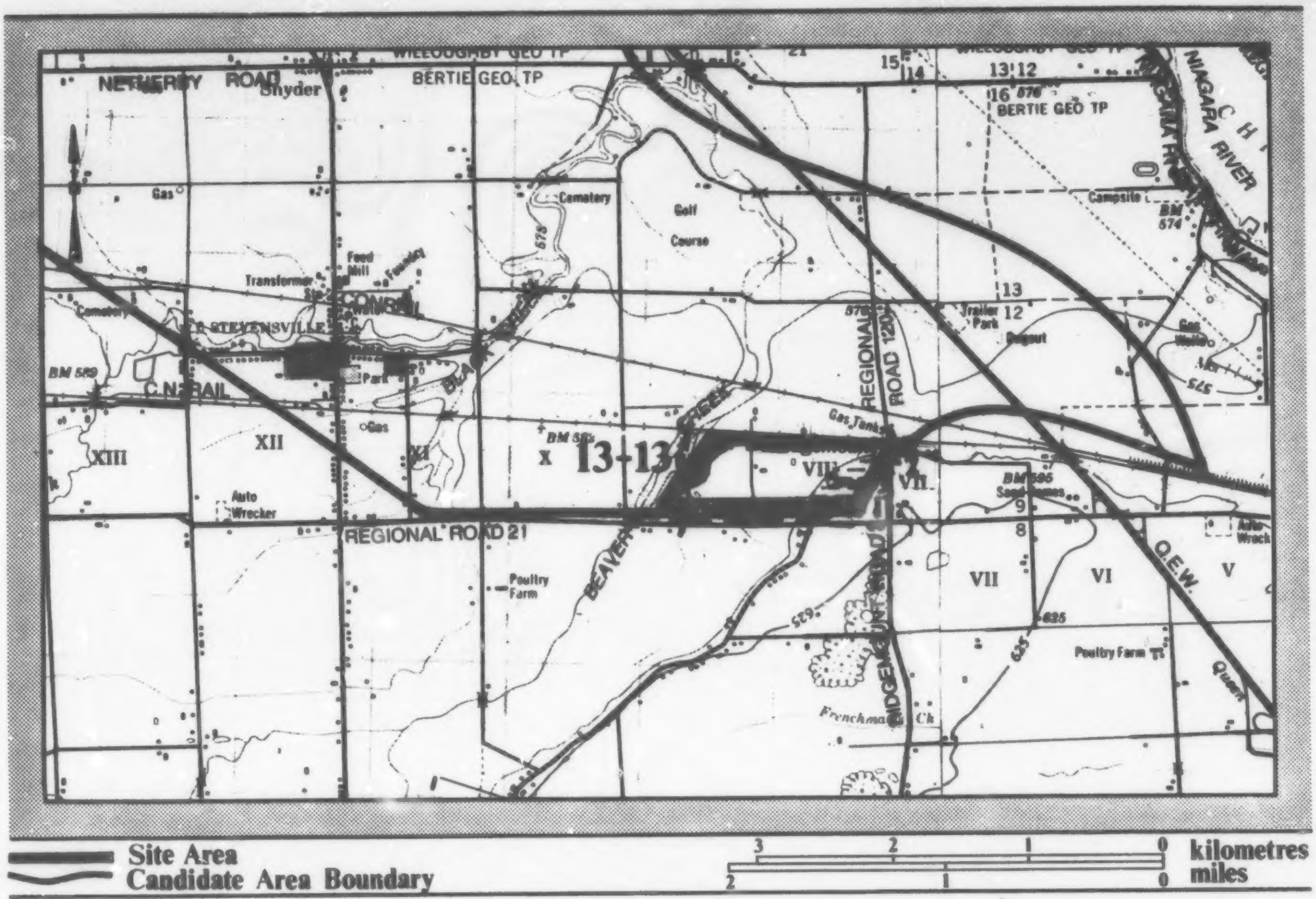
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-13E


WILLOUGHBY GEO TP
NETHERBY ROAD
Snyder
BERTIE GEO TP
NIAGARA RIVER
Campsite
BM 574
Gas
Cemetery
Golf Course
Feed Mill
Foundry
Transformer Sta
CONRAIL
STEVENSVILLE
Cemetery
BM 589
C.N. RAIL
Park
BLACK CREEK
REGIONAL ROAD 120
Trailer Park
Gas Tanks
XIII
XII
XI
X
13-13
VIII
VII
BM 585
Auto Wrecker
REGIONAL ROAD 21
Poultry Farm
BEAVER CREEK
RIDGEMOUNT ROAD
VII
VI
V
Q.E.W.
Auto Wreck
Poultry Farm
Queen
Frenchman's Ch
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The following recreation and/or community features were identified within or adjacent to the site area:

1. St. John's Anglican Church Cemetery;
2. Cemetery (name unknown).

Stevensville is approximately 2.0 km to the west.

SEU 13-13 and a stream course occurs in the western portion of the site area, as well as suspected shallow bedrock in the southeast portion of the site area.

The site area has a rural designation. It could be associated with LF-1E or LF-3E. However, there are site areas located in the same vicinity which are industrially designated. Many of these site areas have more direct access to the potential landfills than PI-14E. It was therefore decided to drop PI-14E from further consideration.

Adjacent Constraints:

Expansion is restricted by a Canadian National Railways rail line to the north; a floodplain to the west; and Niagara Region Road 21 and a candidate area boundary to the south and east.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☐

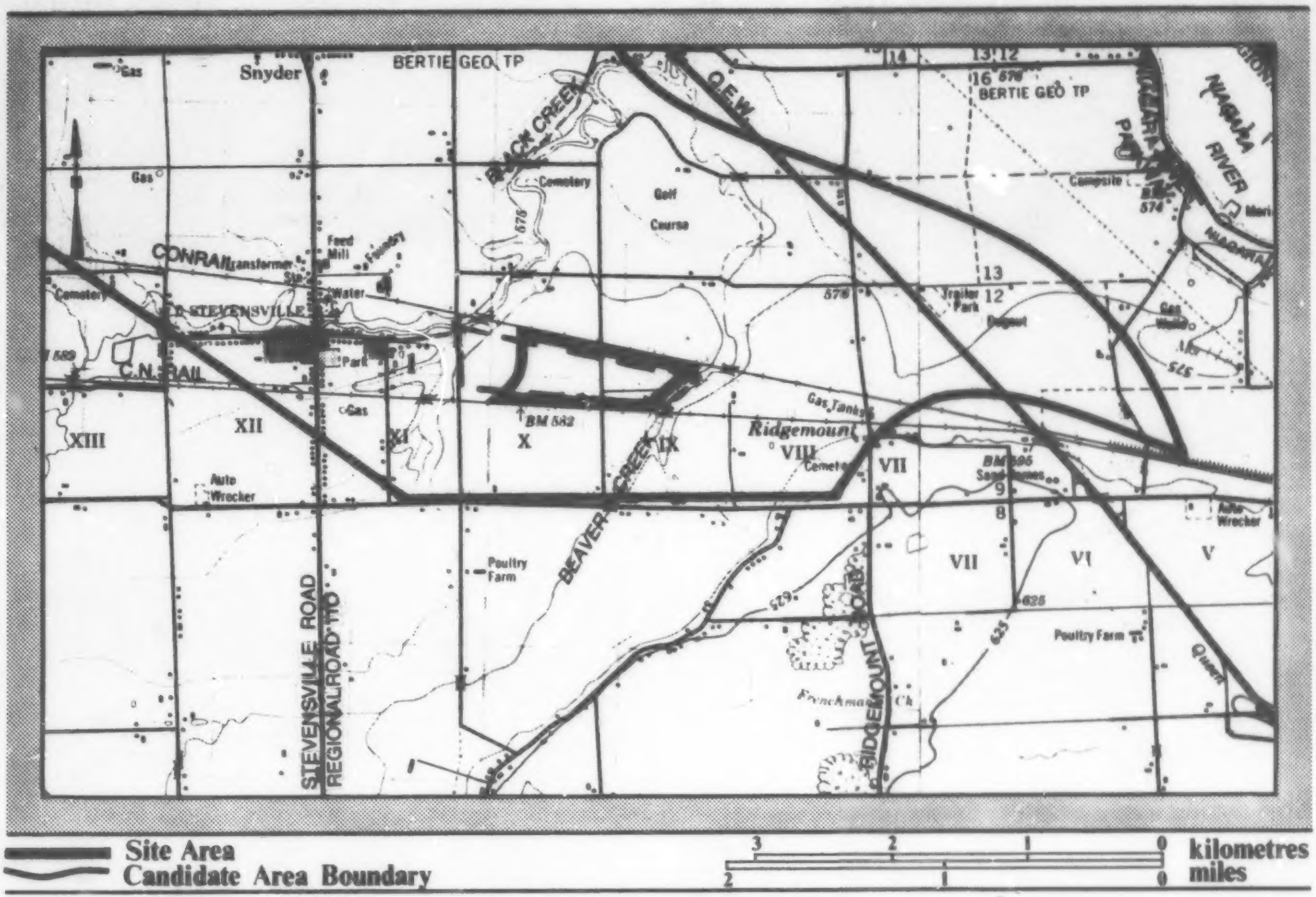
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-14E


Snyder
BERTIE GEO TP
Gas
BLACK CREEK
Cemetery
Golf Course
576
Q.E.W.
14
13 12
16 576
BERTIE GEO TP
NIAGARA PARKWAY
NIAGARA RIVER
Campsite
574
CONRAIL
Transformer Sta.
Feed Mill
Foundry
Water
STEVENSVILLE
Cemetery
580
C.N. RAIL
Park
Gas
BM 582
XIII
XII
XI
X
IX
Ridgemount
VIII
Cemetery
Gas Tanks
VII
13
12
Trailer Park
575
BM 595
Sand
9
8
Auto Wrecker
Auto Wrecker
Poultry Farm
BEAVER CREEK
VII
VI
V
STEVENSVILLE ROAD
REGIONAL ROAD 116
RIDGEMOUNT ROAD
625
625
Frenchman Ck
Poultry Farm
Queen
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Stevensville Public School(1) is located adjacent to the west of the study area. Stevensville is adjacent to the west.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operations area of the facility in the unconstrained area. However, the technical buffer extended into constrained areas and across major transportation facilities. It was therefore decided to drop the site from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a ConRail rail line to the north; a Canadian National Railways rail line to the south; a residential area (Stevensville) and a floodplain to the west; and SEU 13-13 and a floodplain to the east.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☒
5. agriculture ☐
6. social ☒
7. transportation ☐

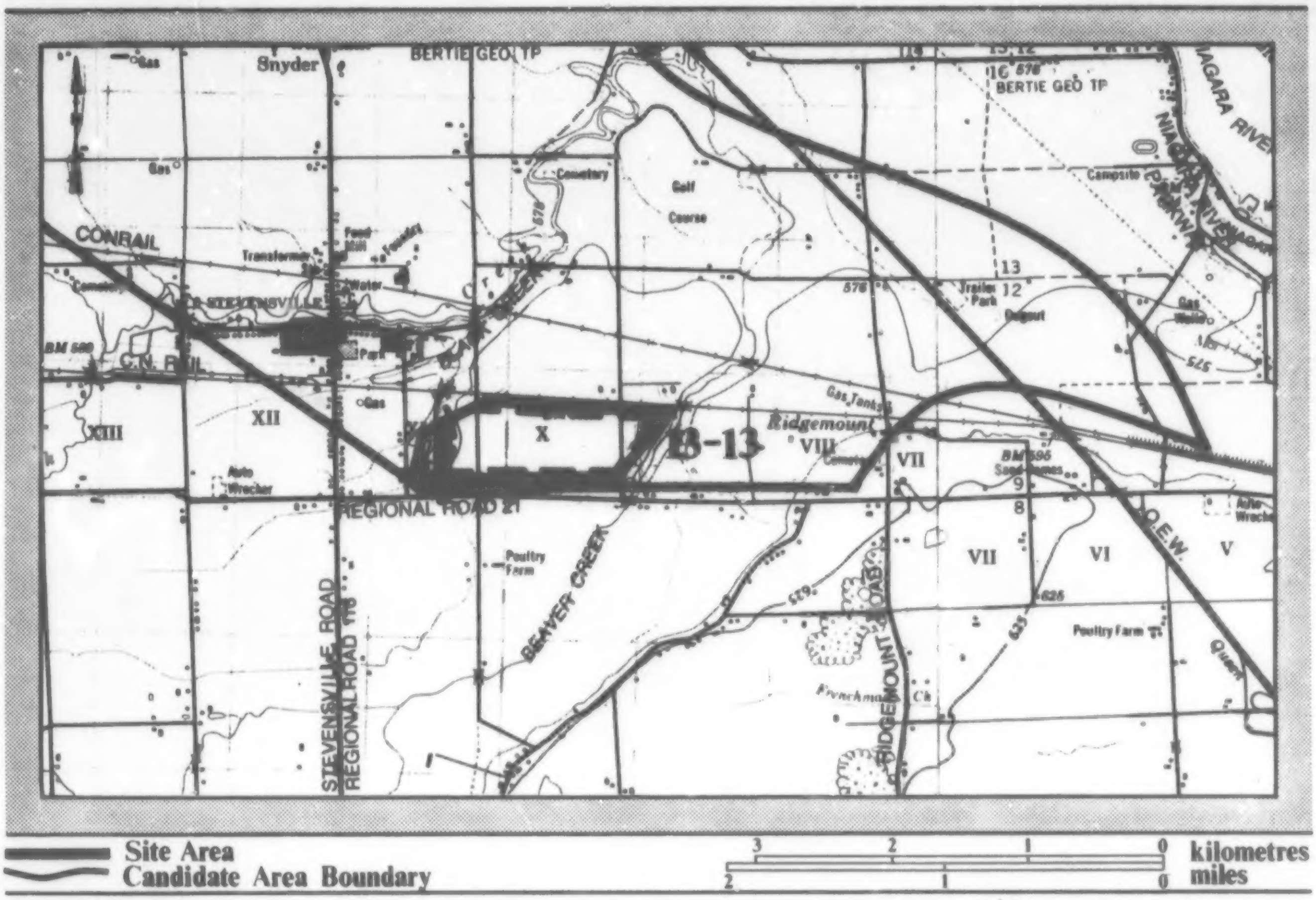
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI -15E


Snyder
BERTIE GEO TP
NIAGARA RIVER
Gas
Cemetery
Golf Course
CONRAIL
Transformer
Feed Mill
Foundry
Water
STEVENSVILLE
Park
BM 580
C.N. RAIL
XIII
XII
X
13-13
Ridgemount
VIII
VII
Gas Tanks
Campsite
13
12
Trailer Park
Dugout
Gas Wells
575
576
578
BM 595
Sand Dunes
9
8
Auto Wrecker
REGIONAL ROAD 21
Poultry Farm
BEAVER CREEK
STEVENSVILLE ROAD
REGIONAL ROAD 116
RIDGEMOUNT ROAD
Frenchman's Ch
VII
VI
V
Q.E.W.
Queen
Poultry Farm
625
579
I
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 13-13 occurs in the east portion of the site area. A stream course/floodplain occurs in the west portion of the site area. In addition the site area is located adjacent to a residential area (Stevensville). Stevensville Public School(1) is adjacent to the north.

The site area is designated rural. It could be associated with LF-1E or LF-3E. However there are site areas located in the same vicinity which are industrially designated. Many of these site areas have more direct access to the potential landfill sites. It was therefore decided to drop PI-16E from further consideration.

Adjacent Constraints:

Expansion is restricted by a Canadian National Railways rail line to the north; a residential area (Stevensville) to the west; a candidate area boundary and Niagara Region Road 21 to the south; and a floodplain to the east.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☒
4. land use ☒
5. agriculture ☐
6. social ☒
7. transportation ☐

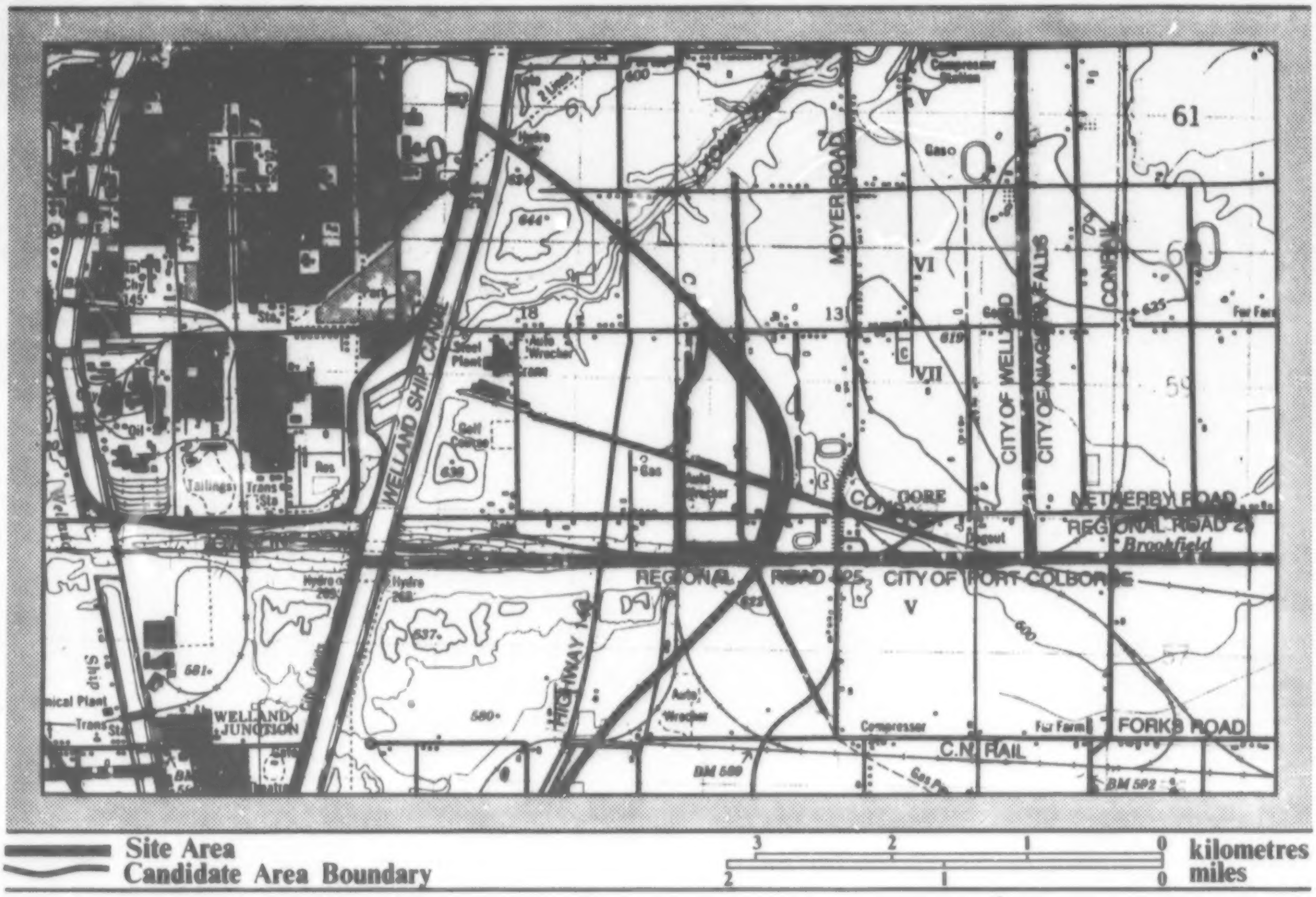
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-16E


WELLAND SHIP CANAL
MOYER ROAD
CITY OF WELLAND
CITY OF NIAGARA FALLS
CONEAU
NETHERBY ROAD
REGIONAL ROAD 25
Brookfield
REGIONAL ROAD 25
CITY OF PORT COLBORNE
HIGHWAY 140
FORKS ROAD
C.N. RAIL
WELLAND JUNCTION
GORE
VI
VII
V
61
60
59
57
644
637
580
581
625
619
600
BM 589
BM 592
Golf Course
Auto Wrecker
Compressor Station
Compressor
Fur Farm
Tailings
kilometres 3 2 1 0
miles 2 1 0

Site Area
Candidate Area Boundary

Site Constraints:

The site area is crossed by a ConRail rail line and a Consumers' Gas pipeline.

The site area is designated rural. It could be associated with LF-1C. However, there is an industrially designated site area located in the same vicinity. It was therefore decided to drop PI-17E from further consideration.

Adjacent Constraints:

Expansion is restricted by a candidate area boundary and residential areas to the north and east; a Canadian National Railways rail line to the west; and Niagara Region Road 25 to the south.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

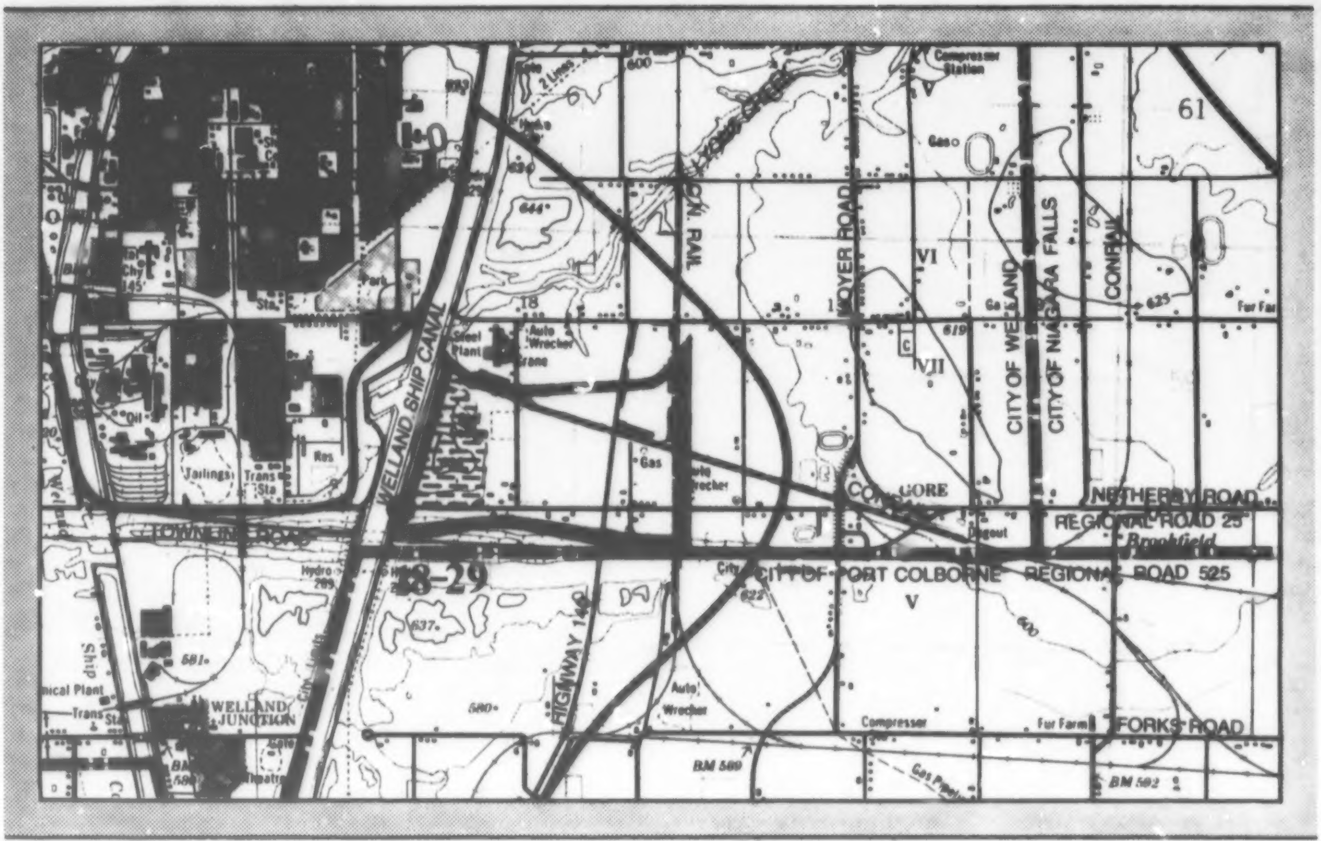
Compatibility Screen

8. existing land use ☑
9. designated land use ☑

System Screen

10. travel distance ☐
11. access routes ☐

PI-17E



Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles
WELLAND SHIP CANAL
C.N. RAIL
MOYER ROAD
CITY OF WELLAND
CITY OF NIAGARA FALLS
CONRAIL
NETHERBY ROAD
REGIONAL ROAD 25
Brookfield
CITY OF PORT COLBORNE
REGIONAL ROAD 525
HIGHWAY 140
FORKS ROAD
TOWNLINE ROAD
18-29
WELLAND JUNCTION
Compressor Station
Steel Plant
Auto Wrecker
Tailings
Trans Sta
Gas
Ship
Chemical Plant
Fur Farm
Compressor
Gas Pipeline
BM 589
BM 592
GORE
VI
VII
V
61
644
637
581
580
622
600
619
625
18

Site Constraints:

An area of spoil occurs in the western portion of the site area, as does SEU 18-29. An Ontario Hydro transmission line, a Canadian National Railways rail line and a ConRail rail line cross the site area. Existing industrial facilities are located within the site area boundaries.

Sufficient site area remains in which to locate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Expansion is constrained by Provincial Highway 58A to the south; a Canadian National Railways rail line to the east; a residential area to the north; and the Welland Canal to the west.

Suitability Screen

1. size ☐
2. physical resources ●
3. biology ●
4. land use ●
5. agriculture ☐
6. social ☐
7. transportation ●

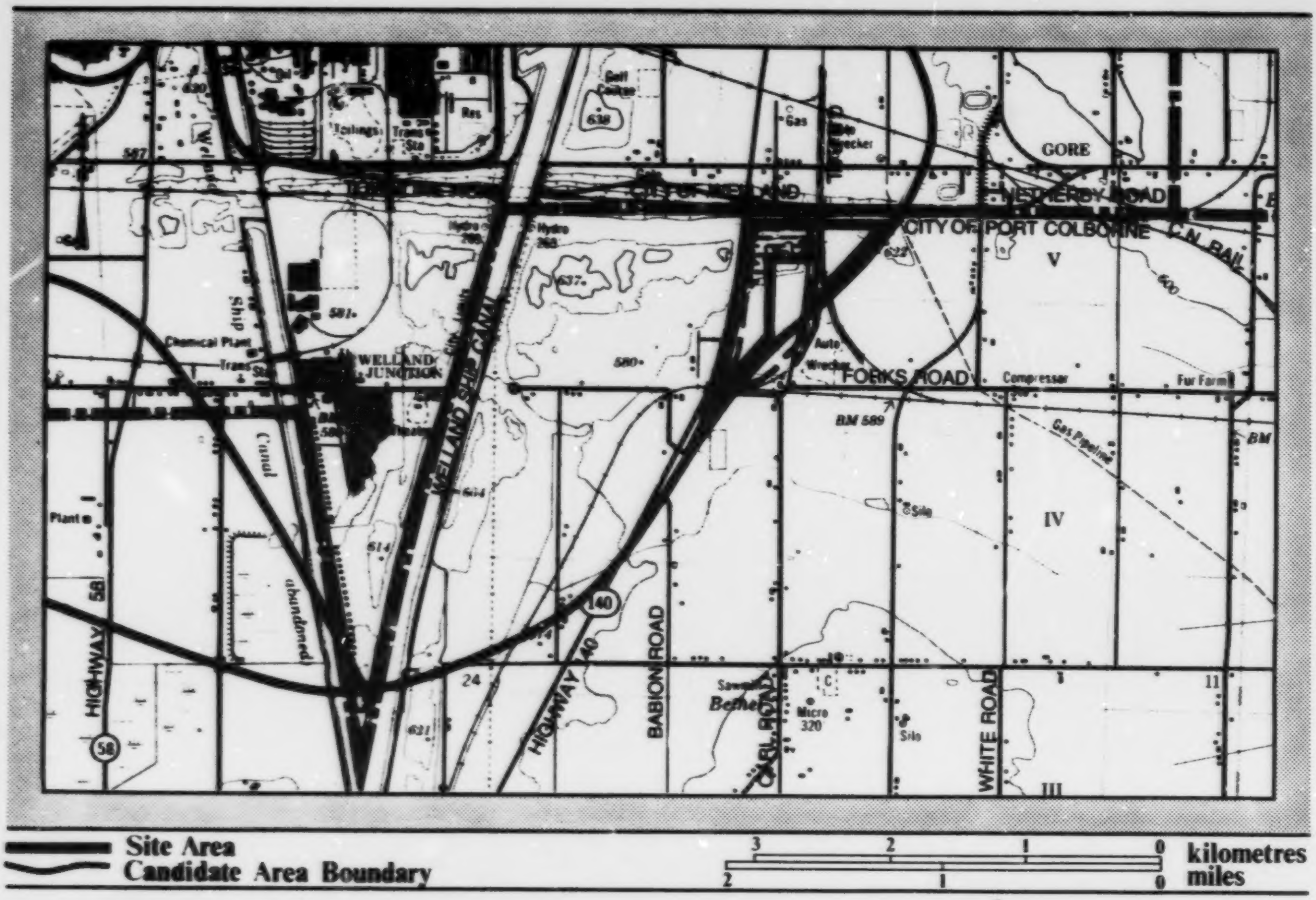
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-18E


Golf Course
630
Tailings
Trans Sta
Res
Gas
Wrecker
GORE
587
CITY OF WELLAND
NETHERBY ROAD
CITY OF PORT COLBORNE
C.N. RAIL
Hydro
V
600
622
637
581
Ship
Chemical Plant
Trans Sta
WELLAND JUNCTION
WELLAND SHIP CANAL
580
Auto Wrecker
FORKS ROAD
Compressor
Fur Farm
BM 589
Gas Pipeline
BM
Canal
614
Plant
Silo
IV
58
HIGHWAY
abandoned
140
BABION ROAD
24
HIGHWAY 140
Sawmill
Bethel
CARL ROAD
Micro 320
Silo
WHITE ROAD
11
III
58
631
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

An area of spoil covers the north portion of the site area. A Canadian National Railways rail line crosses the site area.

There is insufficient area remaining in which to locate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:

Expansion is constrained by candidate area boundaries to the south and east; Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the south; Provincial Highway 58A to the north; and Provincial Highway 140 to the west.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

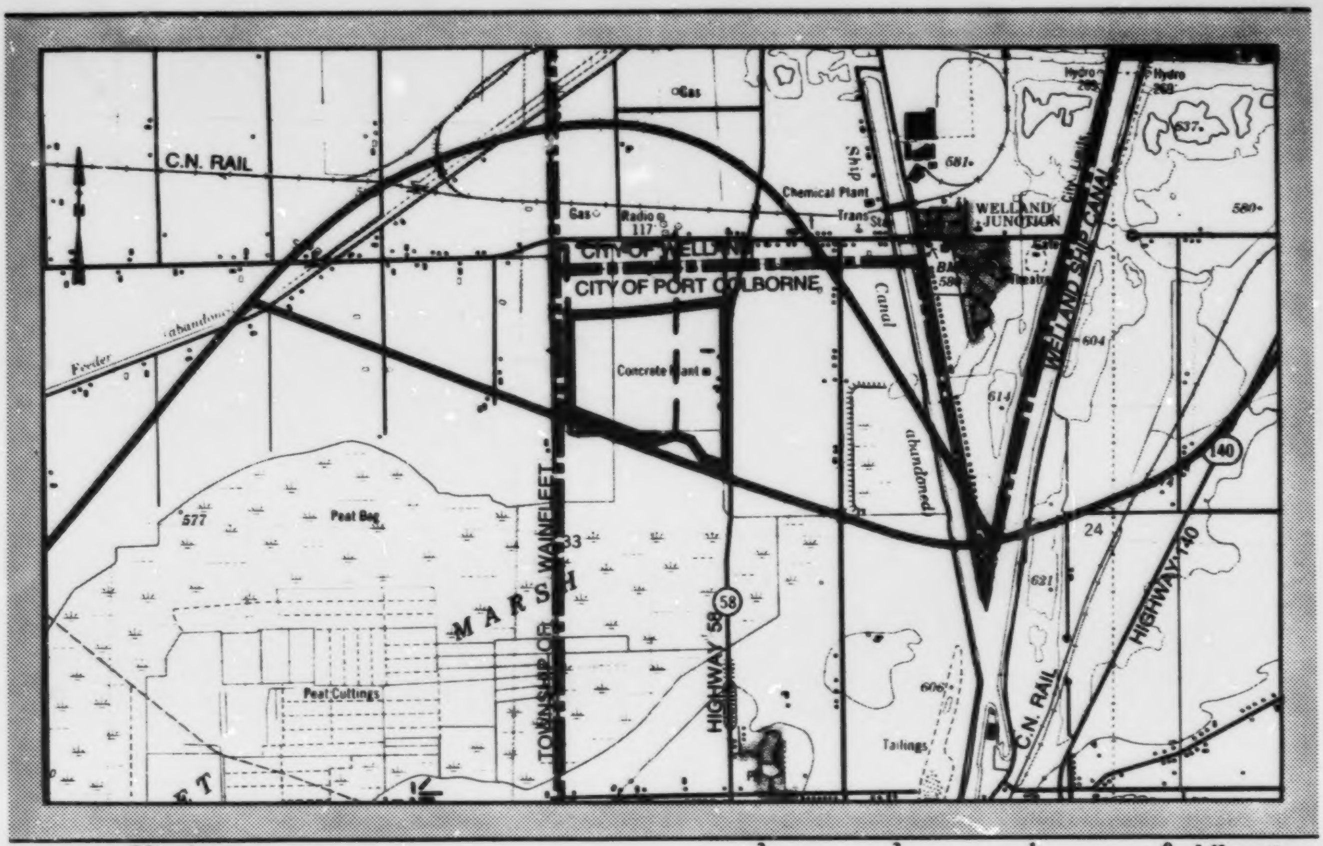
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-19E


C.N. RAIL
Gas
Gas
Radio
117
Chemical Plant
Trans Sta
Ship
Canal
581
580
637
Hydro 289
Hydro 268
WELLAND JUNCTION
WELLAND SHIP CANAL
CITY OF WELLAND
CITY OF PORT COLBORNE
Feeder
abandoned
Concrete Plant
abandoned
604
614
140
24
621
Peat Bog
577
MARSH
33
TOWNSHIP OF WAINFLEET
58
HIGHWAY 58
Peat Cuttings
Tailings
606
C.N. RAIL
HIGHWAY 140

Site Area
Candidate Area Boundary

3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area is designated primarily agricultural and some industrial to accommodate an existing industrial use. The site could be associated with LF-1C. However, there is an industrially designated site area located in the same vicinity. It was therefore, decided to drop PI-20E from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a residential area to the north; Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the west; a candidate area boundary to the south; and Provincial Highway 58 to the east.

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

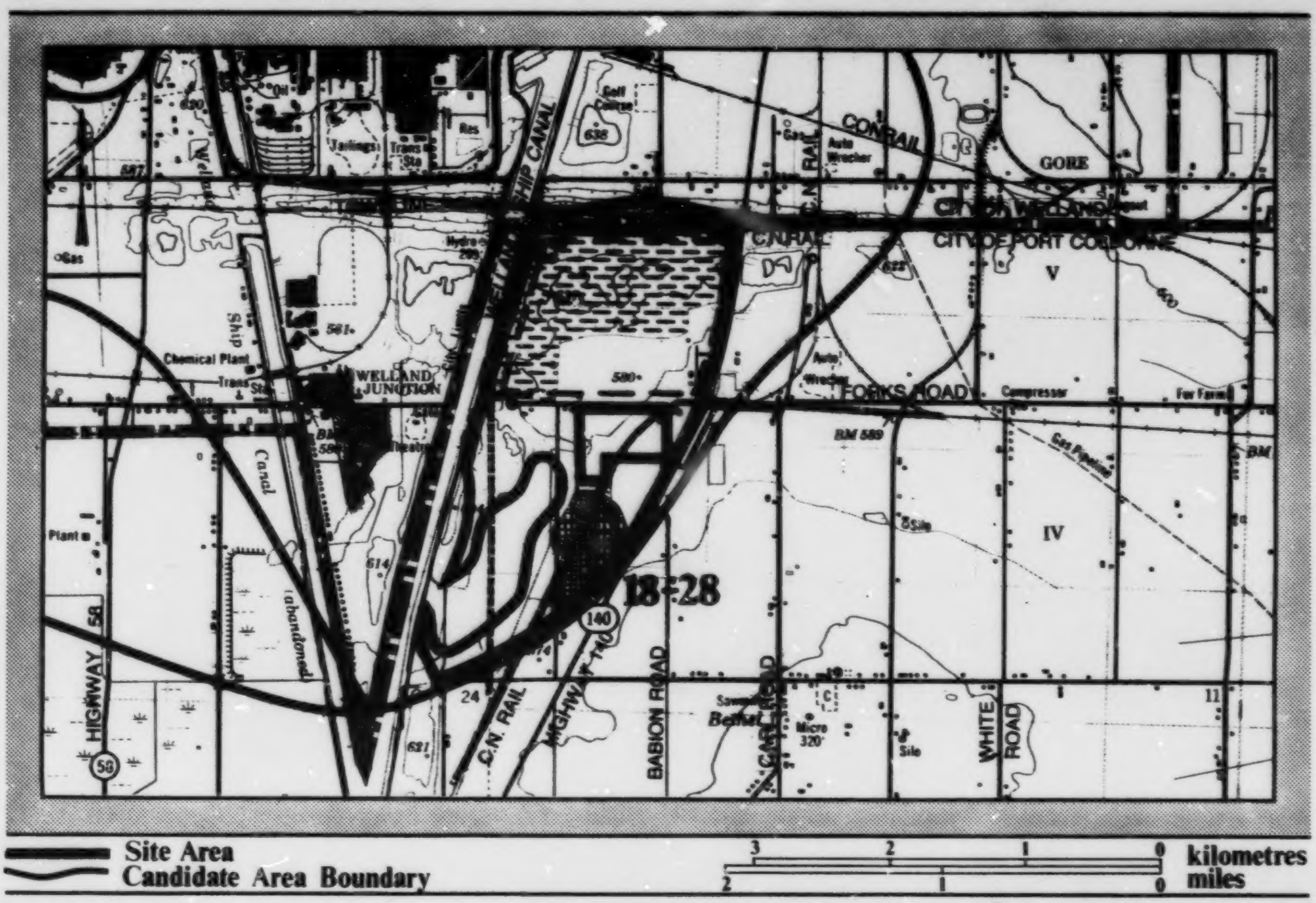
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-20E


Golf Course
Oil
Tailings
Trans Sta
Res
SHIP CANAL
CONRAIL
C.N. RAIL
Gas
Auto Wrecker
GORE
CITY OF WELLAND
CITY OF PORT COLBORNE
CN RAIL
V
Hydro
Gas
Ship
Chemical Plant
Trans Sta
WELLAND JUNCTION
Auto Wrecker
FORKS ROAD
Compressor
Fur Farm
BM 589
Gas Pipeline
BM
Canal
Plant
abandoned
614
IV
18-28
140
HIGHWAY 58
58
24
621
C.N. RAIL
HIGHWAY 140
BABION ROAD
Bethel
Micro 320
Silo
WHITE ROAD
11
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

SEU 18-28 occurs in the south portion of the site area. An area of spoil covers the north portion of the site area. Canadian National Railways rail lines cross the eastern and northern portions of the site area, and a ConRail rail line crosses the northern portion. An Ontario Hydro transmission line crosses the western portion of the site area. The site area is in proximity to Welland.

The site area is designated agricultural and open space. It could be associated with LF-1C. However, there is an industrially designated site area located in the same vicinity. It was therefore decided to drop PI-21E from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Provincial Highway 58A to the north; Provincial Highway 140 and a candidate area boundary to the east; the Welland Canal to the west; and a candidate area boundary to the south.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

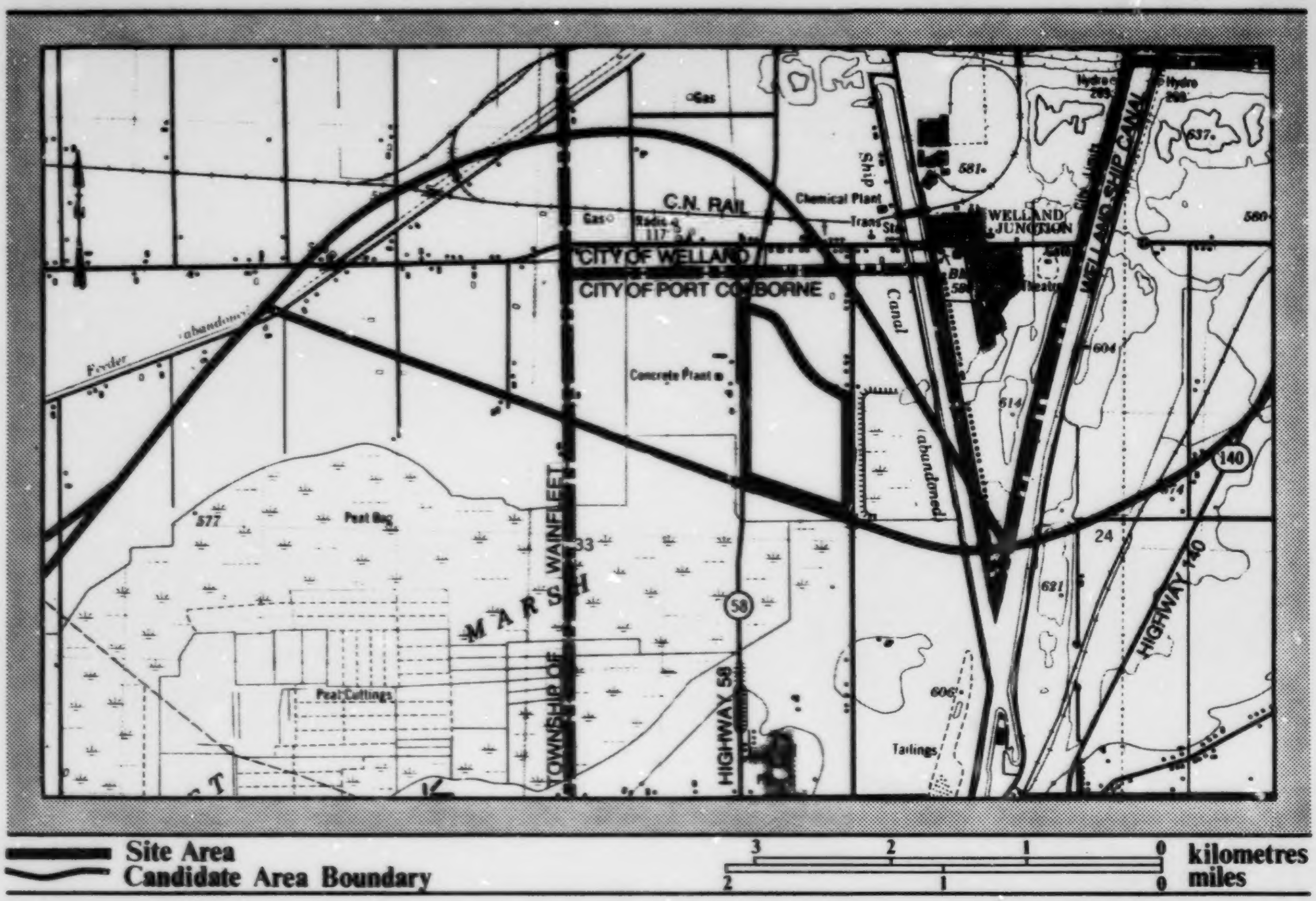
Compatibility Screen

8. existing land use ☒
9. designated land use ☒

System Screen

10. travel distance ☐
11. access routes ☐

PI-21E


C.N. RAIL
CITY OF WELLAND
CITY OF PORT COLBORNE
WELLAND SHIP CANAL
WELLAND JUNCTION
Ship Canal
Chemical Plant
Concrete Plant
Gas
Peat Bog
Peat Cuttings
MARSH
TOWNSHIP OF WAINFLEET
HIGHWAY 58
HIGHWAY 140
Feeder
abandoned
Tailings
Hydro
577
581
604
614
606
621
637
24
33
58
140
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Insufficient constraint-free area exists in which to locate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility within the constraint-free area. However, the technical buffer extended into constrained areas and across major transportation facilities. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Provincial Highway 58 to the west; a wetland area and SEU 12-1 to the east; a candidate area boundary to the south; and a residential area to the north.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

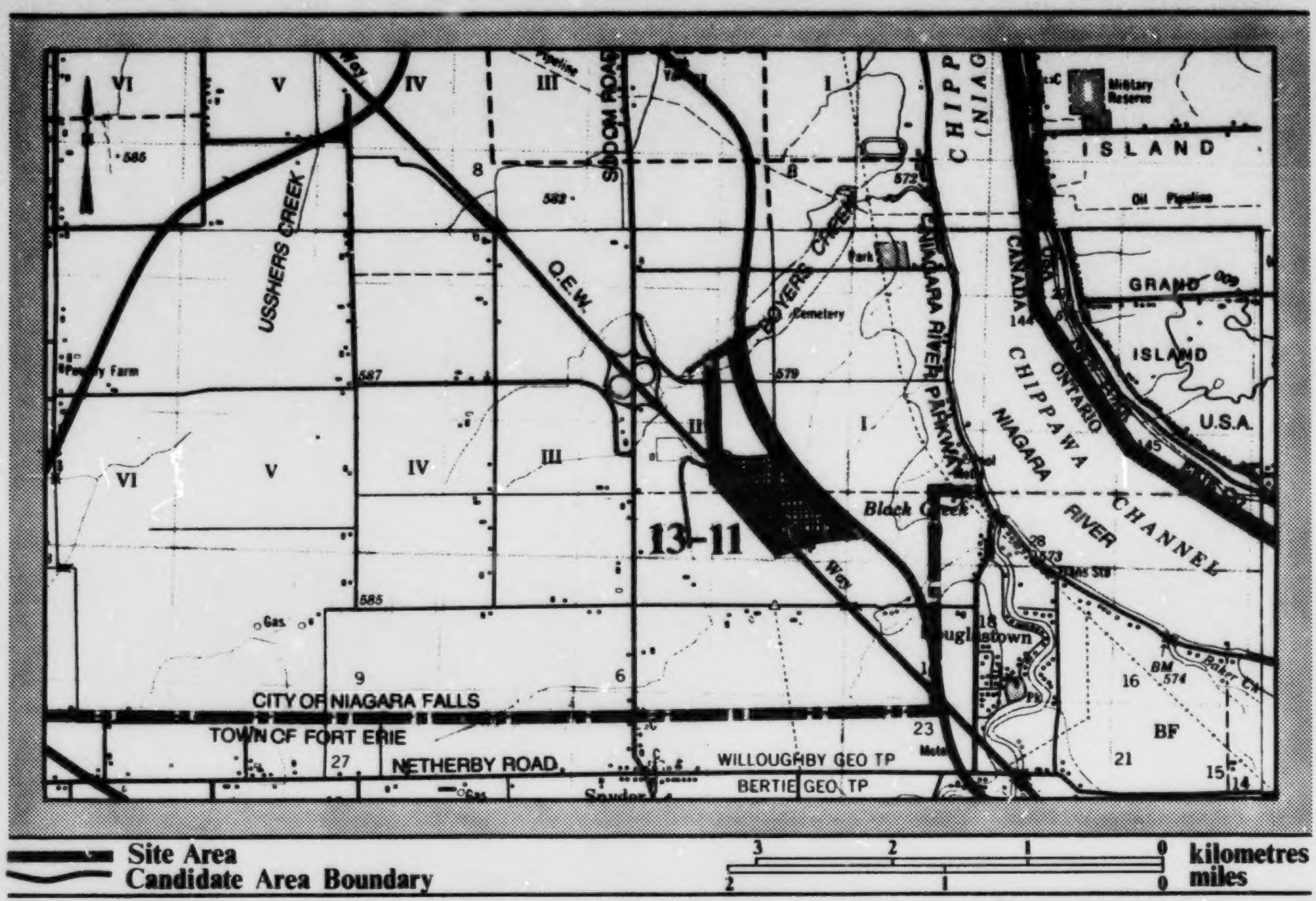
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-22E


VI
V
IV
III
I
II
Pipeline
SIDCOM ROAD
Way
USSHERS CREEK
Q.E.W.
BOYERS CREEK
Park
Cemetery
Poultry Farm
585
582
587
579
572
8
9
6
13-11
Black Creek
Gas
Douglastown
CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
NETHERBY ROAD
WILLOUGHBY GEO TP
BERTIE GEO TP
27
23
18
28
16
21
15
14
BF
BM 574
Baker Cr
NIAGARA RIVER PARKWAY
CANADA
CHIPPAWA
NIAGARA RIVER
CHIPPAWA CHANNEL
ONTARIO
CHIPP (NIAG
144
145
Military Reserve
ISLAND
Oil Pipeline
GRAND ISLAND
U.S.A.
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 13-11. It is also crossed in the western portion by the Queen Elizabeth Way.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility within the constraint-free area. However, the technical buffer extended into constrained areas and crossed major transportation facilities. The site area was therefore dropped from consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by candidate area boundaries to the north and east; a stream course to the northwest; Class 3 or 4 row crops or corn-wheat to the southwest; and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

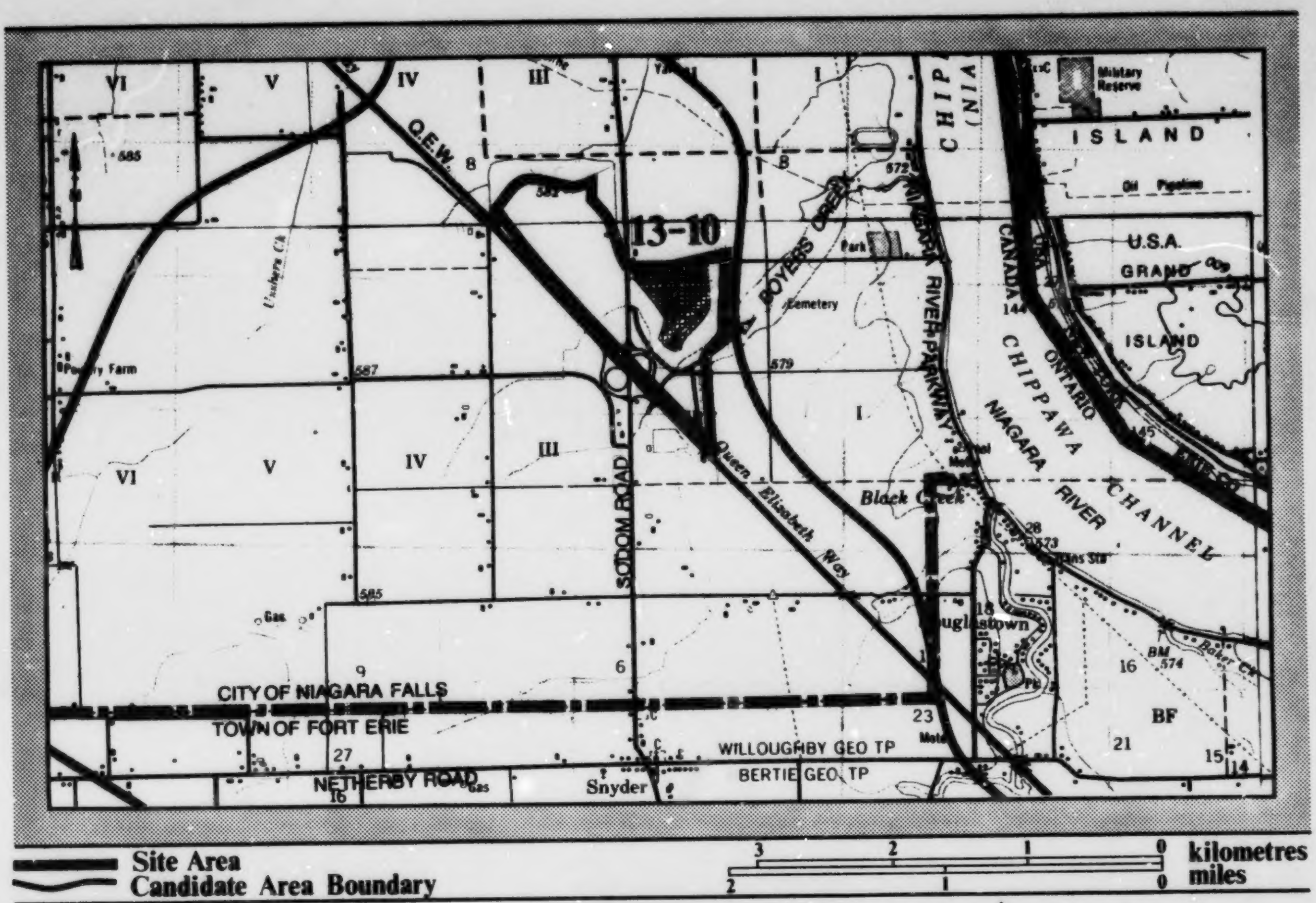
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-23E


VI
V
IV
III
I
Q.E.W.
8
582
13-10
B
572
BOYERS CREEK
Park
Cemetery
NIAGARA RIVER PARKWAY
CHIP (NIA
Military Reserve
ISLAND
Oil Pipeline
U.S.A.
GRAND
ISLAND
CANADA
144
ONTARIO
CHIPPAWA
NIAGARA
RIVER
CHANNEL
145
585
Ussher's Ck
Poultry Farm
587
579
Queen Elizabeth Way
SODOM ROAD
Black Creek
28
573
Gas Sta
Douglastown
18
BM 574
Baker Ck
16
BF
21
15
14
Gas
9
6
CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
23
27
WILLOUGHBY GEO TP
BERTIE GEO TP
NETHERBY ROAD
16
Snyder
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 13-10 and is crossed by Niagara Region Road 116. A stream course crosses the south portion of the site area.

The remaining constraint-free area is irregularly shaped and is not large enough to accommodate a combined physical/chemical treatment plant or incinerator.

Consideration was given to locating the operations area of the facility within the constraint-free area. However, the technical buffer area extended across major transportation facilities and into constrained areas. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of site area boundaries is restricted by the Queen Elizabeth Way and Class 3 or 4 row crops or corn-wheat to the west; a floodplain to the north; two stream courses to the south; and a candidate area boundary to the east.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

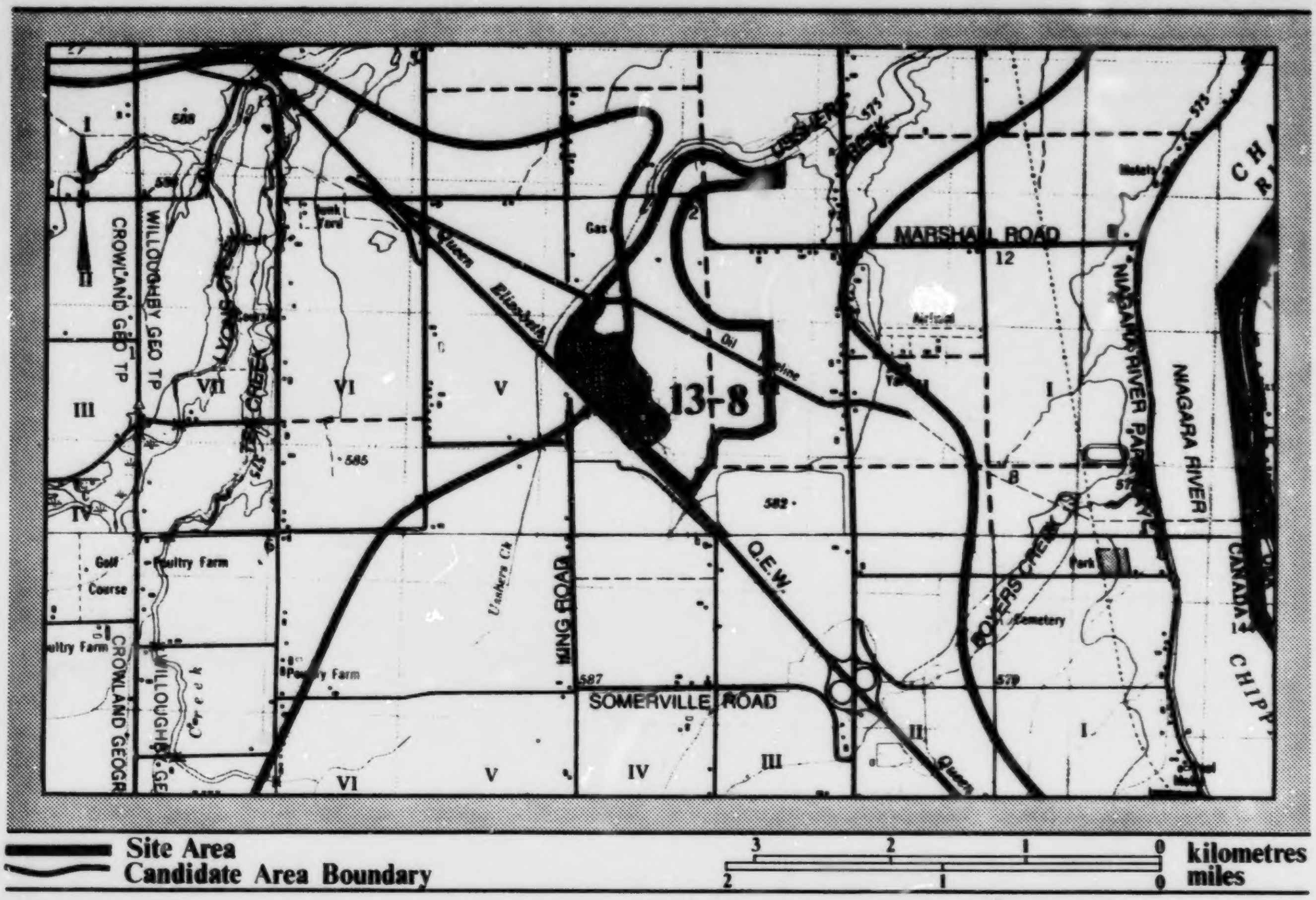
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-24E


13-8
MARSHALL ROAD
SOMERVILLE ROAD
KING ROAD
Q.E.W.
Queen Elizabeth
Oil Pipeline
NIAGARA RIVER PARKWAY
NIAGARA RIVER
CANADA
CHIPPAWA
CROWLAND GEO TP
WILLOUGHBY GEO TP
LYONS CREEK
BOWERS CREEK
USSHERS CREEK
Ussher's Ck
Poultry Farm
Golf Course
Cemetery
Park
Gas
Site Area
Candidate Area Boundary
kilometres
miles
3
2
1
0

Site Constraints:

The site area is crossed by an Interprovincial Pipelines Limited high pressure oil pipeline. SEU 13-8 occurs in the west portion of the site area. The site area is also adjacent to a large residential area.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operations area of the facility in the unconstrained area. However, the technical buffer area extended across major transportation facilities or into constrained areas. It was therefore decided to drop the site area from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a floodplain to the northwest and southeast; a residential area to the east; and the Queen Elizabeth Way to the southwest.

Suitability Screen

1. size ☑
2. physical resources ☐
3. biology ☑
4. land use ☑
5. agriculture ☐
6. social ☐
7. transportation ☑

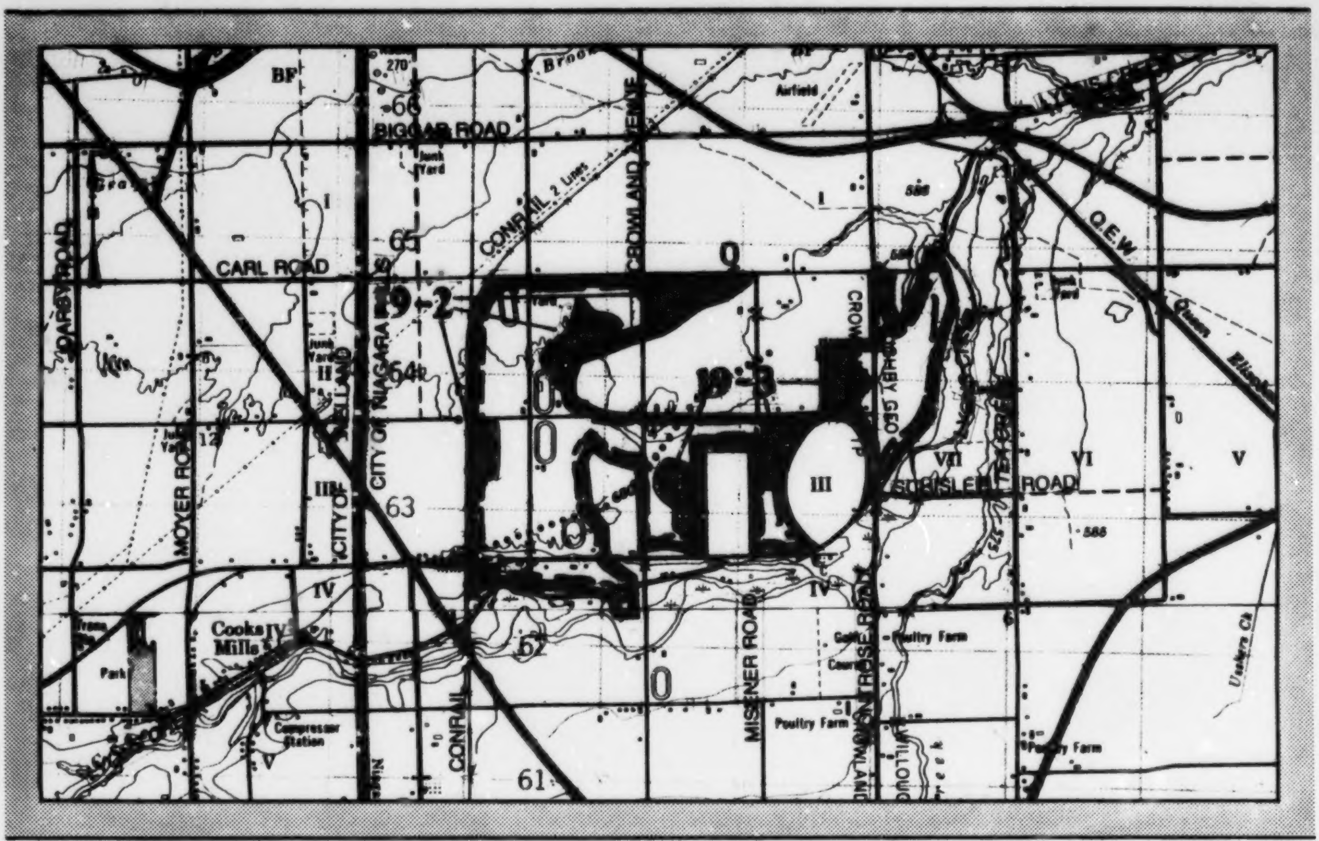
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-25E


BF
270
66
BIGGAR ROAD
CARL ROAD
65
CONRAIL 2 Lines
CROWLAND AVENUE
19-2
19-3
64
63
62
61
DARBY ROAD
MOYER ROAD
CITY OF WELLAND
CITY OF NIAGARA FALLS
Airfield
586
Q.E.W.
I
II
III
IV
V
VI
VII
0
SCHISLER ROAD
Cooks Mills
Park
Compressor Station
CONRAIL
MISENER ROAD
CROWLAND
WILLOUGHBY
Poultry Farm
Junk Yard

▬ Site Area
〰 Candidate Area Boundary

kilometres 3 2 1 0
miles 2 1 0

Site Constraints:

The site area conflicts with SEUs 19-2 and 19-3. Niagara Regional Roads 98 and 27 and a Bell line cross the site area.

The site area is designated agricultural. There are industrially designated site areas in the same vicinity. It was therefore decided to drop PI-26E from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by a ConRail rail line to the west; a floodplain and Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the south; a floodplain to the east; SEU 19-2, Class 1 or 2 and 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) and Class 1 or 2 row crops or corn-wheat, Carl Road and site area boundary of PI-6E to the north

Suitability Screen

1. size ☐
2. physical resources ☐
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

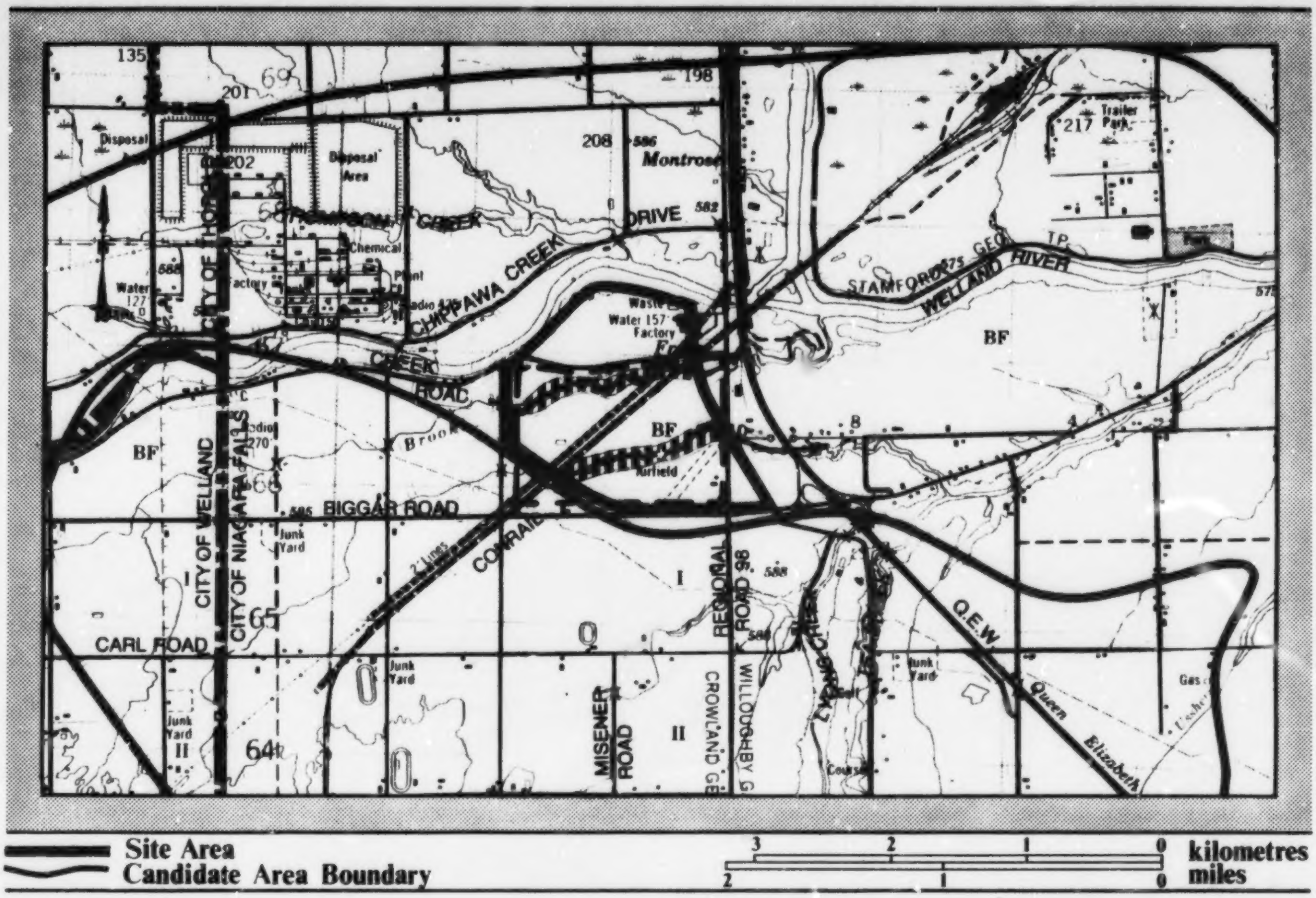
Compatibility Screen

8. existing land use ☑
9. designated land use ☑

System Screen

10. travel distance ☐
11. access routes ☐

PI-26E



135
201
69
198
202
Disposal
Disposal Area
208
586
Montrose
217
Trailer Park
58
CREEK
DRIVE
582
Chemical Plant
Factory
Water 127
Radio
CHIPPAWA CREEK
Waste
Water 157
Factory
STAMFORD
575
GEO. TP.
WELLAND RIVER
BF
CREEK ROAD
Radio 270
Brook
BF
8
4
BF
CITY OF WELLAND
CITY OF NIAGARA FALLS
CITY OF THOROLD
66
585
BIGGAR ROAD
Airfield
Junk Yard
CONRAIL
2 Lines
I
REGIONAL ROAD 98
588
I
Q.E.W.
65
CARL ROAD
Junk Yard
Junk Yard
Junk Yard
MISENER ROAD
CROWLAND GE
WILLOUGHBY G
LYONS CREEK
II
II
64
Queen Elizabeth
Gas
Course
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area is crossed by a ConRail rail line, an Ontario Hydro transmission line, two stream courses and floodplains and Niagara Region Road 98.

The site area is industrially designated. Sufficient area remains in which to locate the operating area of the facility.

Adjacent Constraints:

Expansion of the site area boundaries is constrained by Niagara Region Road 47 to the south; the Queen Elizabeth Way and a commercial designated and vacant area to the east; floodplain and an existing industrial facility to the north; and Crowland Avenue and the site area boundary of PI-30E to the west.

Suitability Screen

1. size ☐
2. physical resources ☑
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

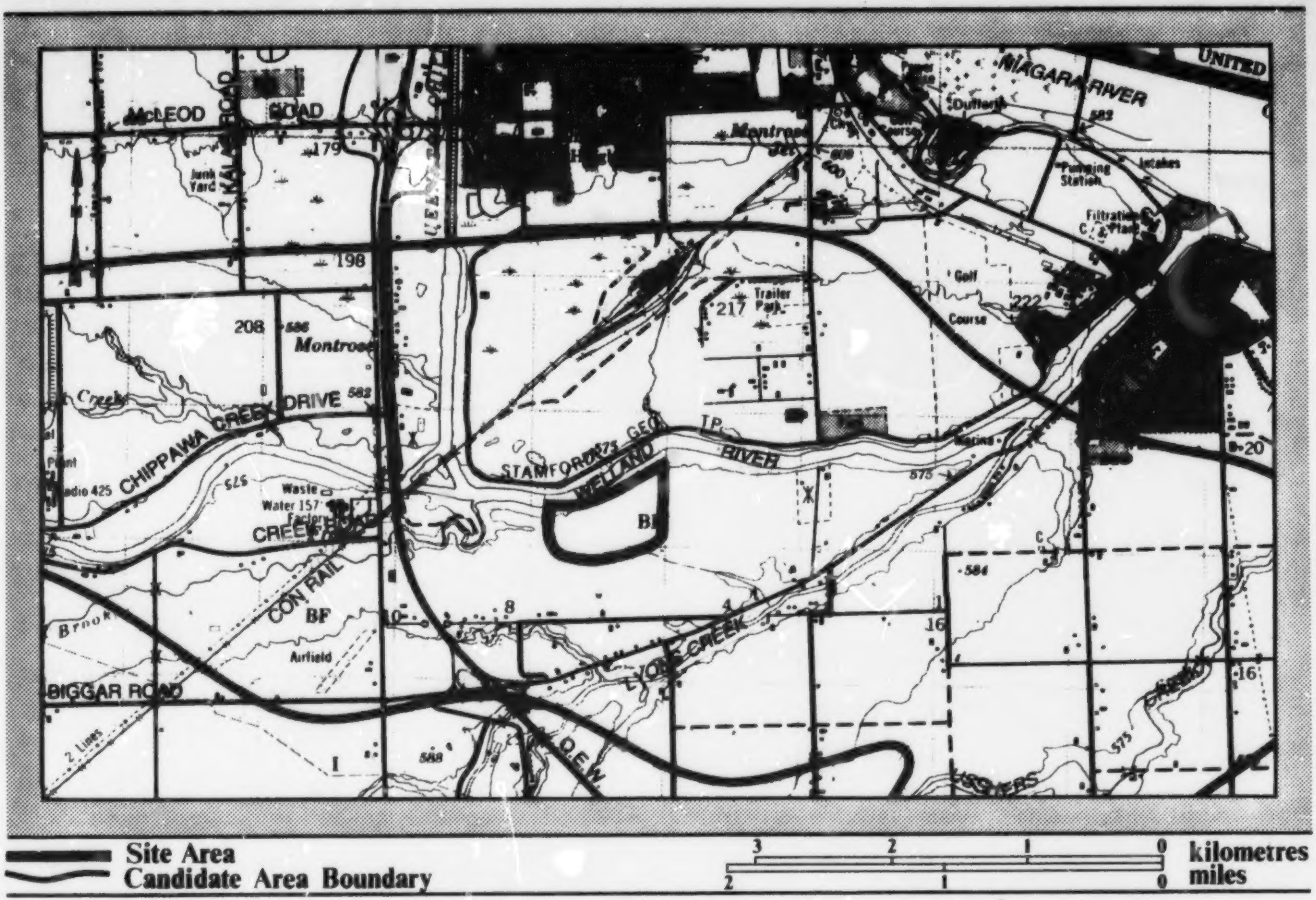
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-27E


UNITED
NIAGARA RIVER
McLEOD ROAD
KALAR ROAD
179
198
Junk Yard
Montrose Jct.
Dufferin
Pumping Station
Intakes
Filtration Plant
Golf Course
222
217
Trailer Park
208
Montrose
Creek
CHIPPAWA CREEK DRIVE
582
STAMFORD
WELLAND RIVER
575
Marina
Waste Water
Radio 425
CREEK ROAD
CON RAIL
BF
Brook
Airfield
BIGGAR ROAD
2 Lines
588
LYONS CREEK
Q.E.W.
584
16
8
4
Site Area
Candidate Area Boundary
3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operations area of the facility within the constraint-free area. However, the technical buffer area extends into constrained areas. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by residential, commercial designated and vacant areas to the south and east; a floodplain to the north; and by the Queen Elizabeth Way to the west.

Suitability Screen

1. size ●
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

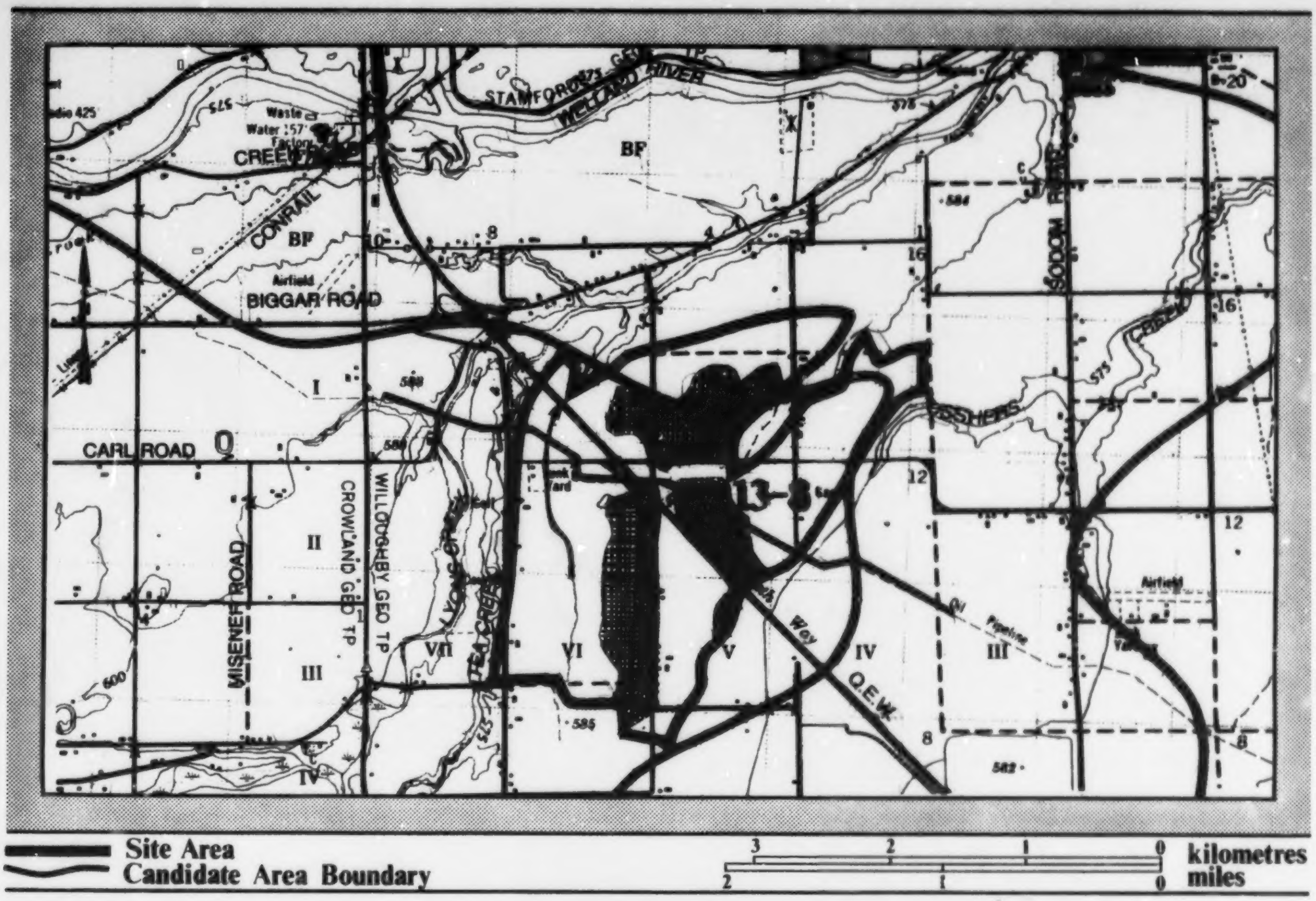
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-28E


STAMFORD
WELLAND RIVER
CREEK ROAD
CONRAIL
BF
BF
Airfield
BIGGAR ROAD
SODOM ROAD
CREEK
CARL ROAD
MISENER ROAD
CROWLAND GEO TP
WILLOUGHBY GEO TP
LYONS CREEK
TEE CREEK
13-8
Oil Pipeline
Q.E.W.
Airfield
I
II
III
IV
V
VI
VII
III
IV
P-20
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The site area conflicts with SEU 13-8. It is crossed by the Queen Elizabeth Way, an Interprovincial Pipelines Limited high pressure oil pipeline and a stream course.

There is insufficient constraint-free area in which to locate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operations area of the facility within the constraint-free area. However, the technical buffer area extended into constrained areas. It was therefore decided to drop the site area from further consideration.

Adjacent Constraints:

Expansion is restricted by a residential area to the north; SEU 13-6 and a floodplain to the west; a floodplain, SEU 13-8, and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) area to the south; and floodplain and SEU 13-7 to the east.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

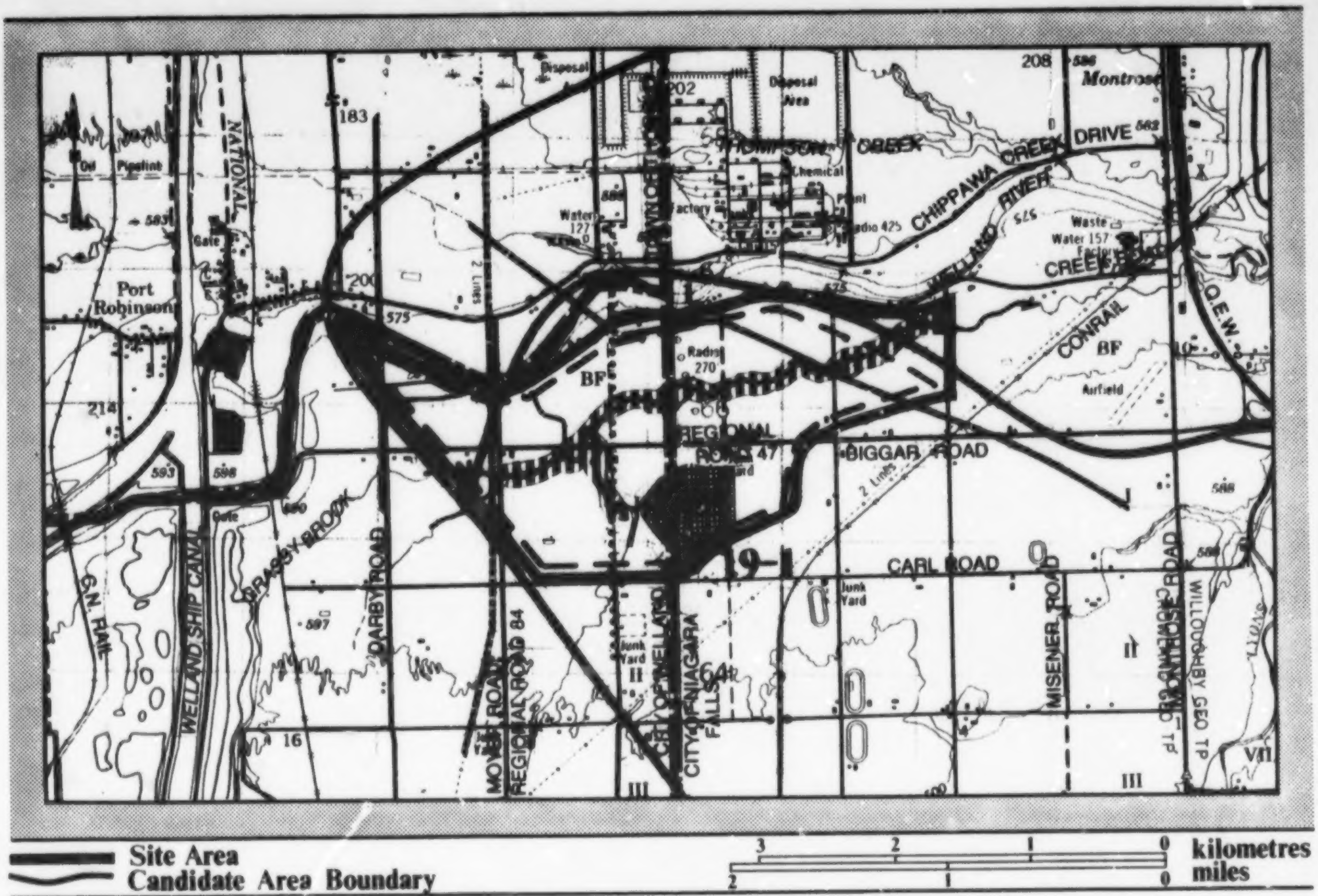
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-29E


Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles
Port Robinson
Montrose
WELLAND SHIP CANAL
NATIONAL
CHIPPAWA CREEK DRIVE
WELLAND RIVER
CREEK
CONRAIL
Q.E.W.
BIGGAR ROAD
CARL ROAD
REGIONAL ROAD 47
REGIONAL ROAD 84
DARBY ROAD
MISENER ROAD
BRASSY BROOK
G.N. RAIL
CITY OF NIAGARA FALLS
CITY OF WELLAND
WILLOUGHBY GEO TP
19-1
BF
Oil Pipeline
Disposal Area
Chemical
Plant
Factory
Radio 425
Radio 270
Water 127
Waste Water 157
Airfield
Junk Yard
2 Lines
Gate
575
583
200
202
208
183
214
593
598
597
586
16
64
III
VII

Site Constraints:

The site area is crossed by a stream course and floodplain, 3 Ontario Hydro transmission lines, a Consumers' Gas gas pipeline, a Bell line, an Interprovincial Pipelines Limited high pressure oil pipeline and Niagara Region Roads 47 and 84. SEU 19-1 occurs within the site area boundaries. A cemetery (name unknown) (1) is adjacent to the north and Port Robinson is adjacent to the west.

There is insufficient constraint-free area in which to locate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility within the constraint-free area. However, the technical buffer area extended into constrained areas or across major transportation facilities. It was therefore decided to drop the site area from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a candidate area boundary to the west; a floodplain to the south and north; SEU 13-5 to the north; and a floodplain to the east.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☑
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☑

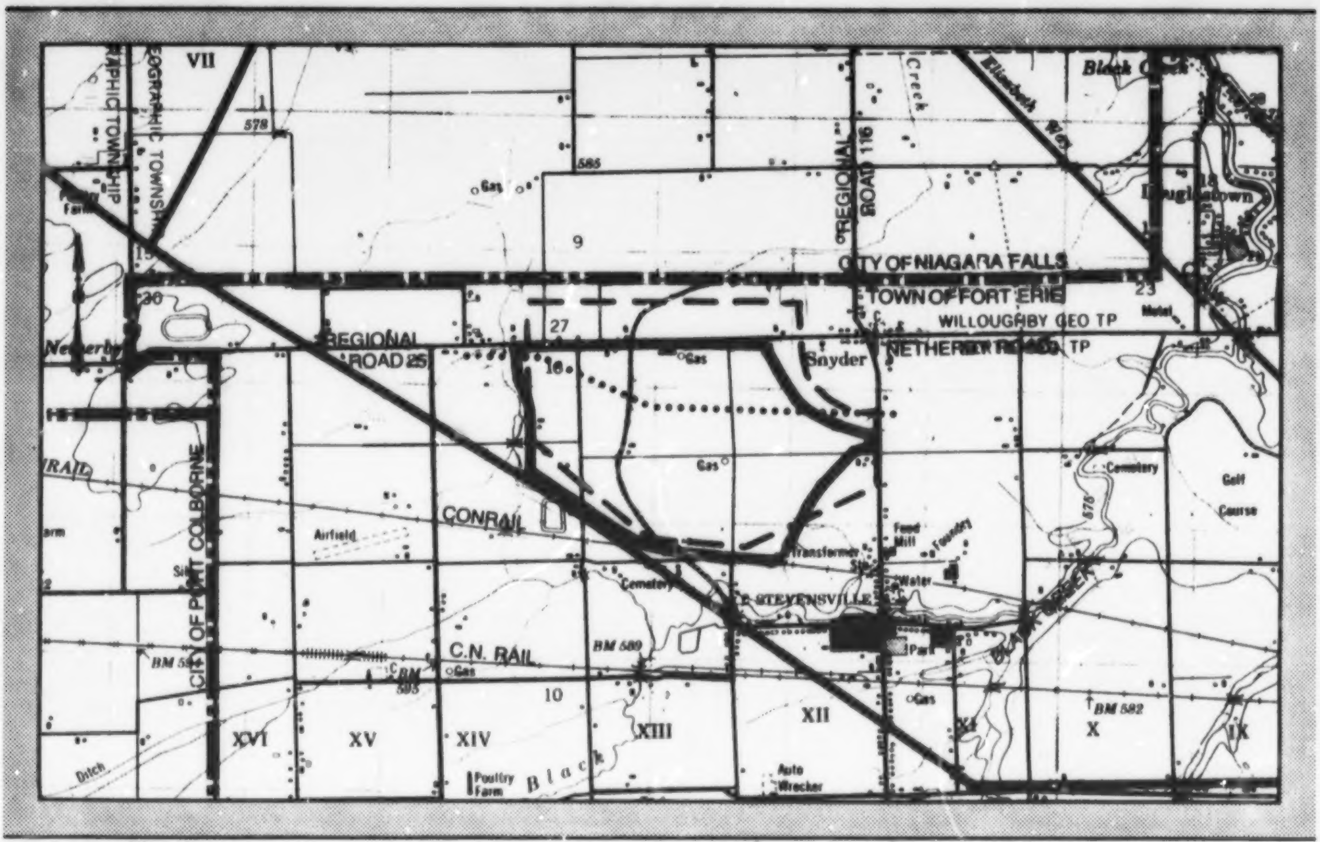
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-30E


VII
GEOGRAPHIC TOWNSHIP
CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
WILLOUGHBY GEO TP
BERTIE GEO TP
REGIONAL ROAD 116
REGIONAL ROAD 25
Black Creek
Douglastown
Snyder
CONRAIL
C.N. RAIL
CITY OF PORT COLBORNE
STEVENSVILLE
Airfield
Cemetery
Transformer
Feed Mill
Foundry
Water
Park
Golf Course
Gas
Poultry Farm
Auto Wrecker
Motel
BM 589
BM 582
BM 584
BLACK CREEK
Ditch
9
10
27
30
23
XVI
XV
XIV
XIII
XII
XI
X
IX

▬ **Site Area**
〰 **Candidate Area Boundary**

3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The site area is crossed by a stream course and a Bell line.

The following community and/or recreation features were identified adjacent to the site area:

1. United Empire Loyalists Conservation Area
2. Stevensville Conservation Area

Stevensville and Snyder are adjacent to the south and north of the site area respectively.

The site area is designated rural. It could be associated with LF-1E or LF-3E. However, there are industrially designated site areas located in the same vicinity. Many of these site areas also have more direct access to the potential landfill sites. It was therefore decided to drop PI-31E from further consideration.

Suitability Screen

1. size ☐
2. physical resources ☒
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

Compatibility Screen

8. existing land use ☒
9. designated land use ☒

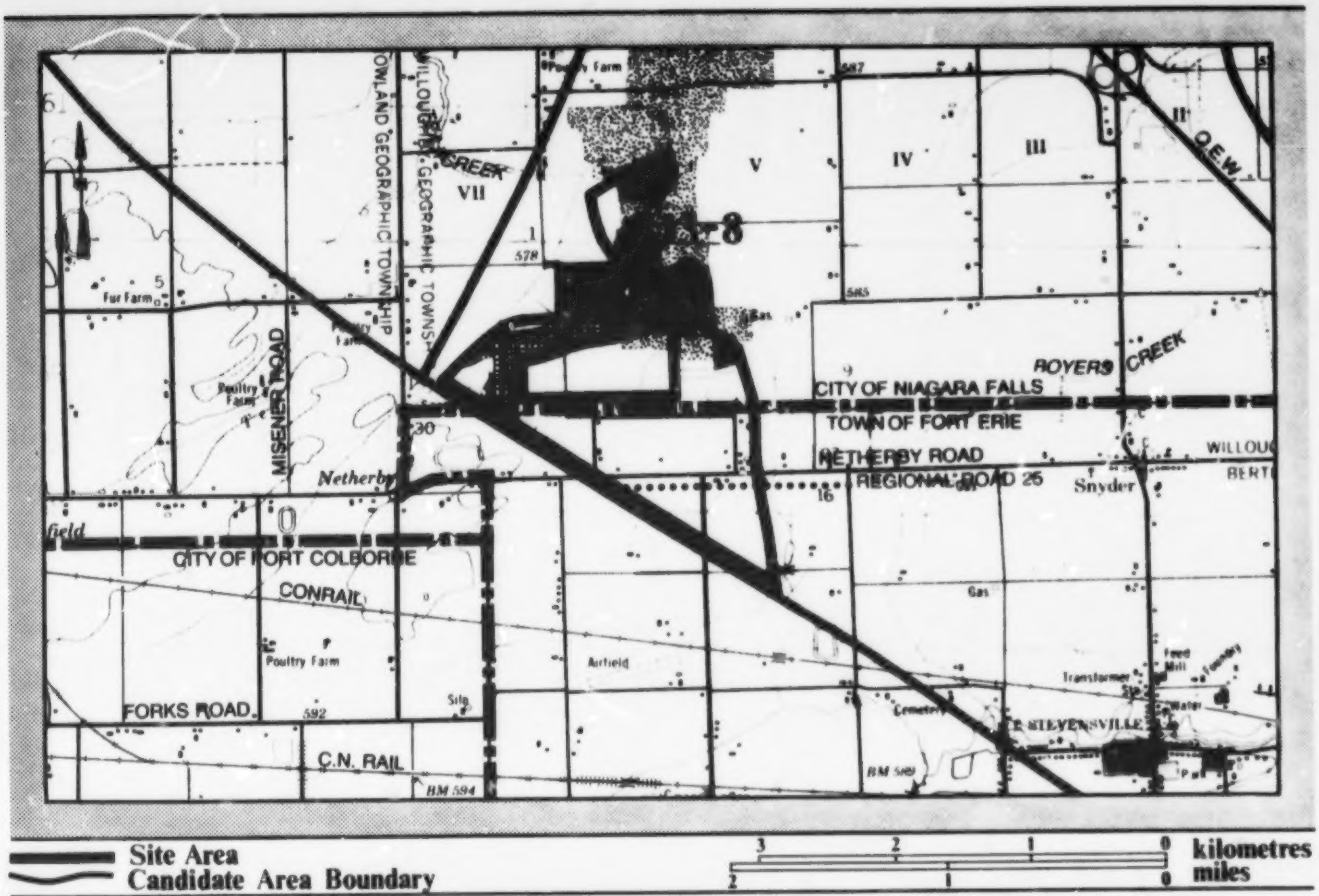
System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Expansion of the site area boundaries is restricted by Niagara Region Road 25 to the north; a floodplain to the west; residential areas (Snyder and Stevensville) to the northeast, east and southeast; Niagara Region Road 116 to the east; and a ConRail rail line and SEU 13-14 to the south.

PI-31E


Site Area
Candidate Area Boundary
kilometres
miles
3
2
1
0
2
1
0
CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
NETHERBY ROAD
REGIONAL ROAD 25
CITY OF PORT COLBORNE
CONRAIL
FORKS ROAD
C.N. RAIL
MISENER ROAD
ROYERS CREEK
WILLOUGHBY CREEK
Q.E.W.
Snyder
STEVENSVILLE
Netherby
8
V
IV
III
II
VII
Poultry Farm
Fur Farm
Airfield
Cemetery
Gas
Transformer Sta
BM 594
BM 589
592
578
585
587
30
16
9
5
61

Site Constraints:

The north portion of the site area conflicts with SEU 13-8. The south portion of the site area is crossed by Niagara Region Road 25 and a Bell line. Willoughby Marsh Conservation Area occurs in the north portion of the site area.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility within the constraint-free area. However, the technical buffer area extended into constrained areas or across major transportation facilities. It was therefore decided to drop the site area from further consideration.

Adjacent Constraints:

Expansion of the site area boundaries is restricted by a floodplain to the east and northeast; a candidate area boundary to the south; and a floodplain, a stream course and Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) to the northwest.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☒
7. transportation ☒

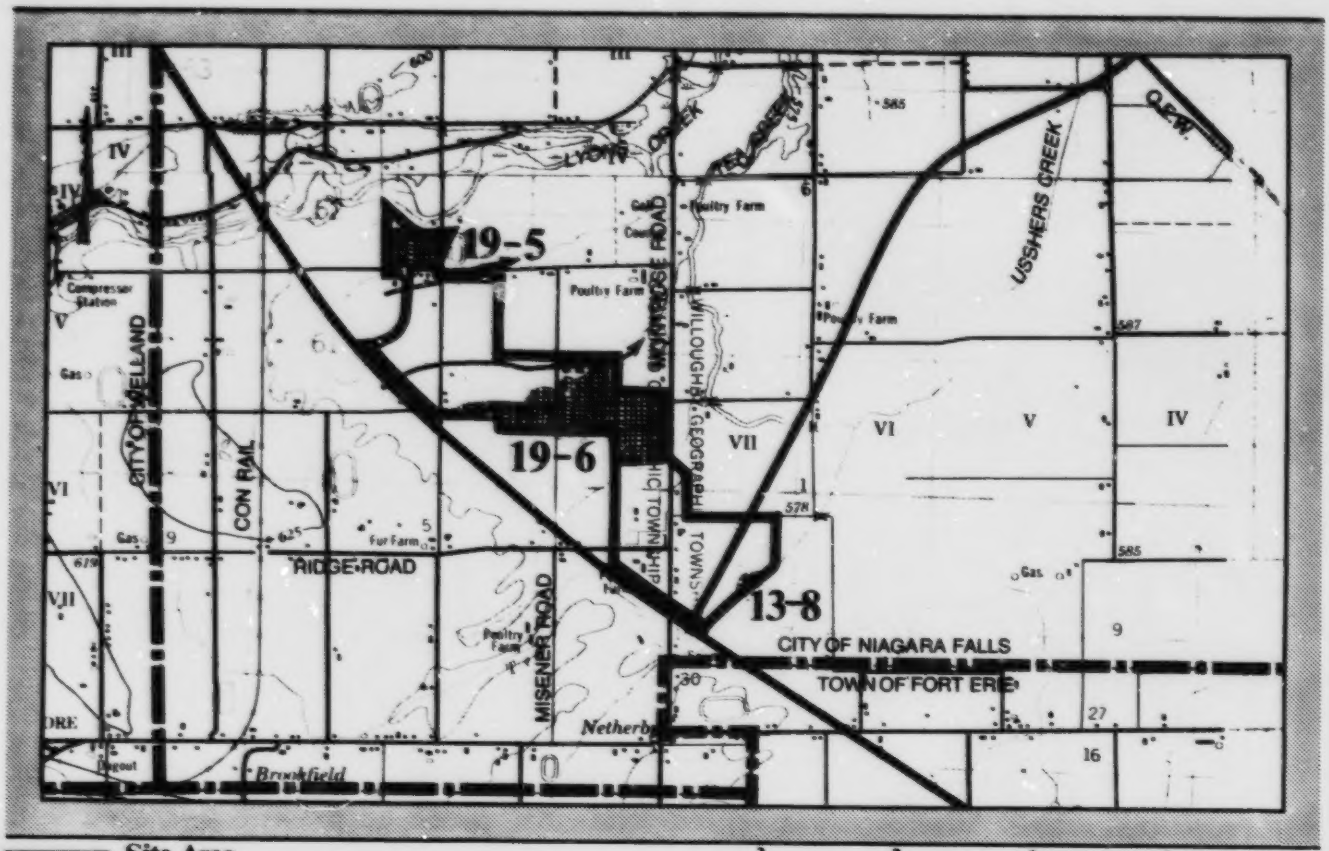
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-32E


19-5
19-6
13-8
LYONS CREEK
USSHERS CREEK
Q.E.W.
CITY OF WELLAND
CON RAIL
RIDGE ROAD
MISENER ROAD
WILLOUGHBY GEOGRAPHIC TOWNSHIP
CITY OF NIAGARA FALLS
TOWN OF FORT ERIE
Poultry Farm
Fur Farm
Compressor Station
Gas
Netherby
Brookfield
IV
V
VI
VII
585
587
578
625

Site Area
Candidate Area Boundary

3 2 1 0 kilometres
2 1 0 miles

Site Constraints:

The north portion of the site area conflicts with SEU 19-5 and SEU 19-6 occurs in the east portion. Niagara Region Road 98 crosses the east portion of the site area. Two stream courses also cross the site area. SEU 13-8 occurs in the south portion of the site area.

There is insufficient constraint-free area remaining in which to locate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility in the unconstrained area. However, the technical buffer area extended across major transportation facilities or into constrained areas. The site area was therefore dropped from further consideration.

Adjacent Constraints:
Expansion is constrained by Class 3 or 4 mixed, cereal grain, hay-grain or hay (good quality) and Class 1 or 2 pasture, grazing or hay (poor quality) to the northwest; a candidate area boundary and Class 3 or 4 row crops or corn-wheat and mixed, cereal grain, hay-grain or hay (good quality) to the southwest; Class 1 or 2 and 3 or 4 row crops or corn-wheat and Class 1 or 2 pasture, grazing or hay (poor quality) to the northwest; and by Class 3 or 4 row crops or corn-wheat, a stream course and SEU 13-8 to the southeast.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

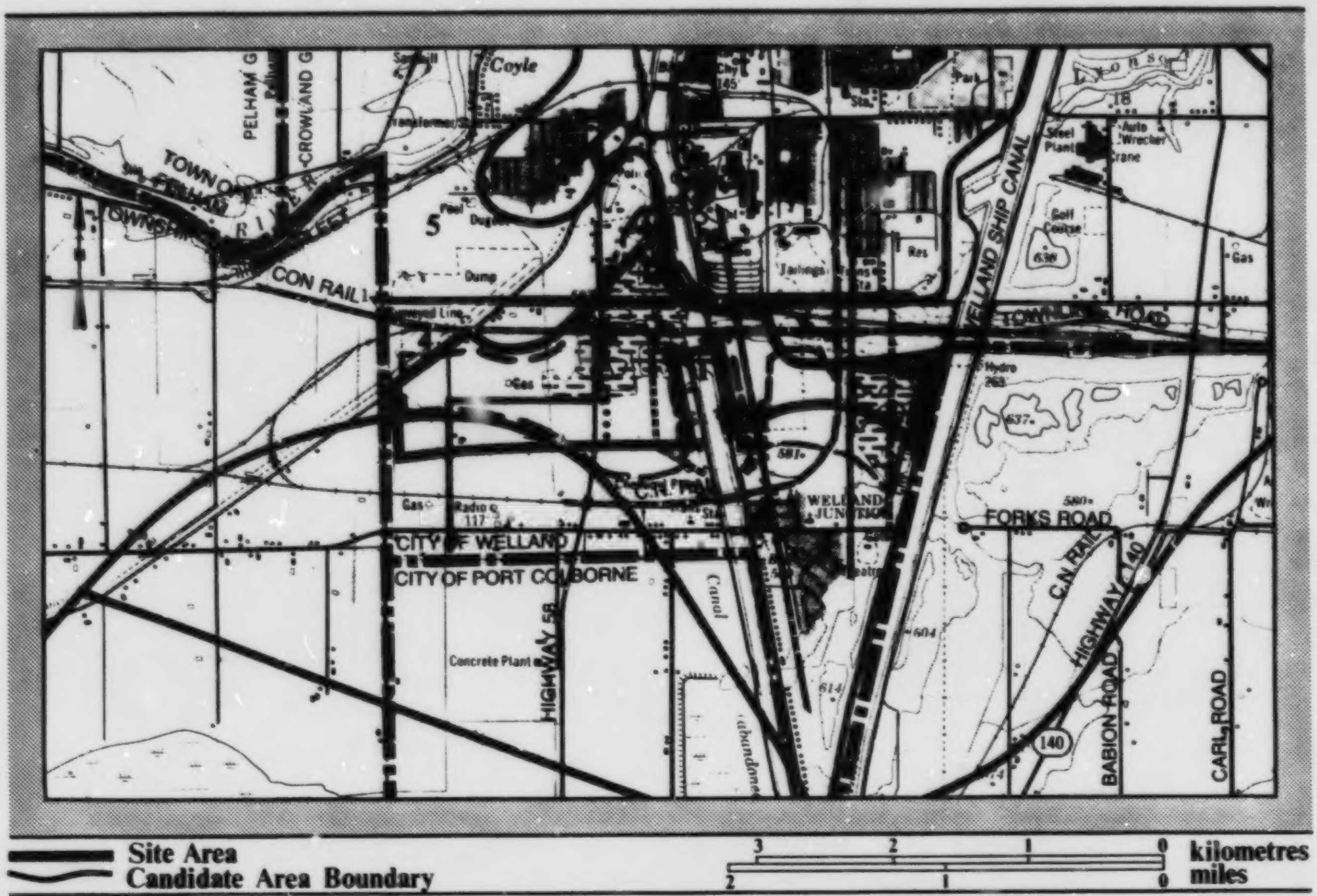
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-33E


Coyle
PELHAM
CROWLAND
TOWN OF PELHAM
TOWNSHIP
CON RAIL
5
Dump
WELLAND SHIP CANAL
Steel Plant
Auto Wrecker
Golf Course
Gas
TOWNLINE ROAD
Hydro
637
581
C.N.
WELLAND JUNCTION
FORKS ROAD
580
C.N. RAIL
HIGHWAY 140
140
CITY OF WELLAND
CITY OF PORT COLBORNE
HIGHWAY 58
Concrete Plant
Canal
abandoned
604
614
BABION ROAD
CARL ROAD
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:
Areas of spoil occur within the site area boundaries. The site area is crossed by two Canadian National Railway rail lines, two Consumers' Gas gas pipelines, two Ontario Hydro transmission lines, Provincial Highways 58 and 58A, Niagara Region Roads 25 and 68 and a ConRail line. An existing industrial facility is also partially located within the site area boundaries.

The following community and/or recreation features were identified within or adjacent to the site area:

1. Niagara South Rowing Club;
2. City of Welland Parks Department;
3. City of Welland Works Department;
4. Welland Feeder Canal;
5. St. George Park.

Welland is adjacent to the north.

There is insufficient constraint-free area remaining in which to locate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:
Expansion of the site area boundaries is constrained by an urban residential area (Welland) and a candidate area boundary to the north; a residential area (Welland Junction and Dain City) and the Welland Canal to the south; the Welland Canal to the east; and the abandoned Welland Canal feeder and Class 1 or 2 row crops or corn-wheat to the west.

Suitability Screen

1. size ☑
2. physical resources ☑
3. biology ☐
4. land use ☑
5. agriculture ☐
6. social ☑
7. transportation ☑

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

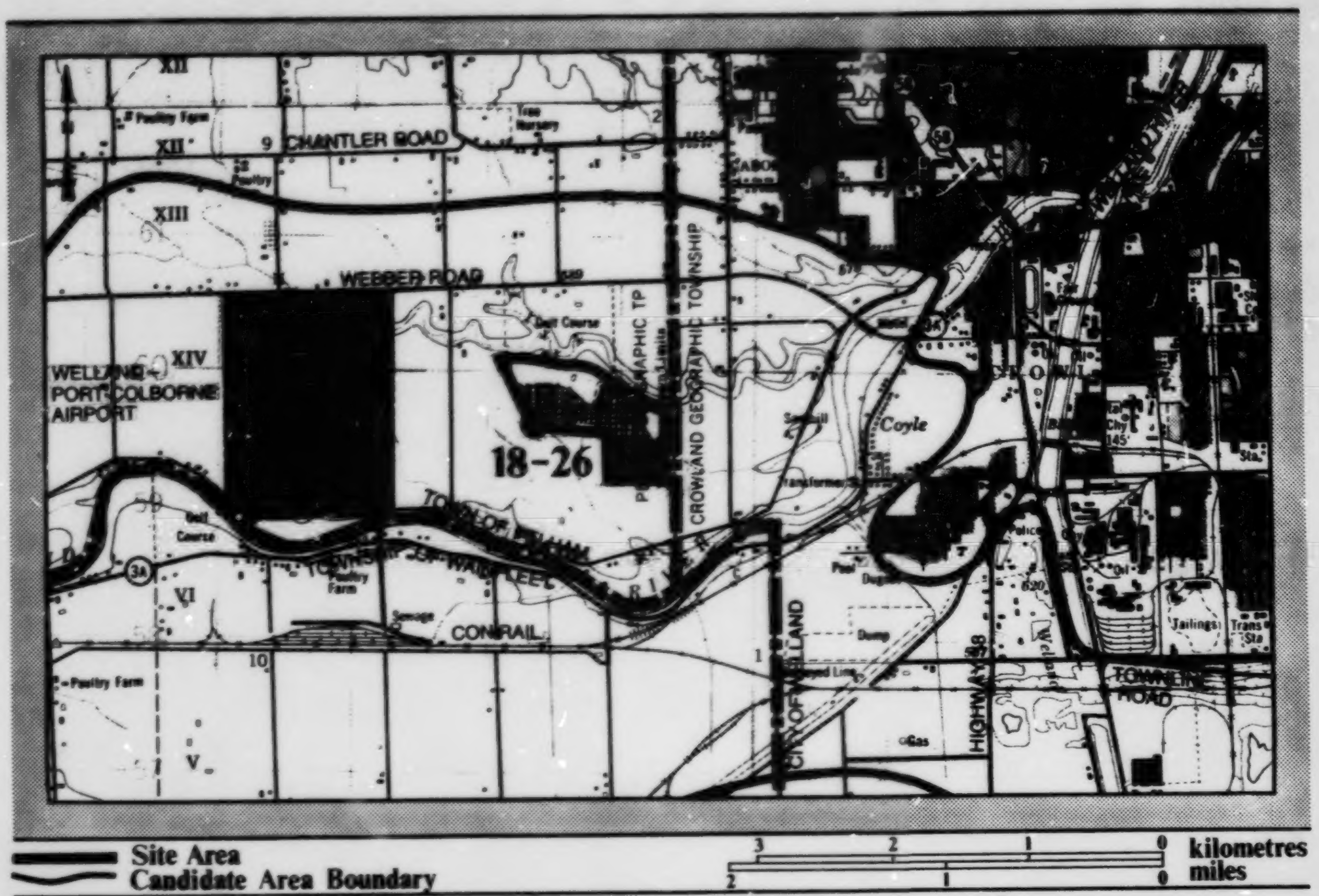
10. travel distance ☐
11. access routes ☐

PI-34E

Site Constraints:

Continued

Consideration was given to locating the operations area of the facility in the constraint-free area. However, the technical buffer area extended into constrained areas. The site area was therefore dropped from further consideration.


CHANTLER ROAD
WEBBER ROAD
WELLAND-PORT COLBORNE AIRPORT
18-26
CROWLAND GEOGRAPHIC TOWNSHIP
TOWN OF PELHAM
TOWNSHIP OF WAINFLEET
CONRAIL
CITY OF WELLAND
HIGHWAY 58
TOWNLINE ROAD
Coyle
Site Area
Candidate Area Boundary
kilometres
miles

Site Constraints:
SEU 18-26 conflicts with the site area.

The remaining constraint-free area is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Adjacent Constraints:
Expansion is restricted by a floodplain to the north; Class 1 or 2 row crops or corn-wheat to the south, west and east; and by Class 1 or 2 pasture, grazing or hay (poor quality) to the south.

Suitability Screen

1. size ☒
2. physical resources ☐
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☐

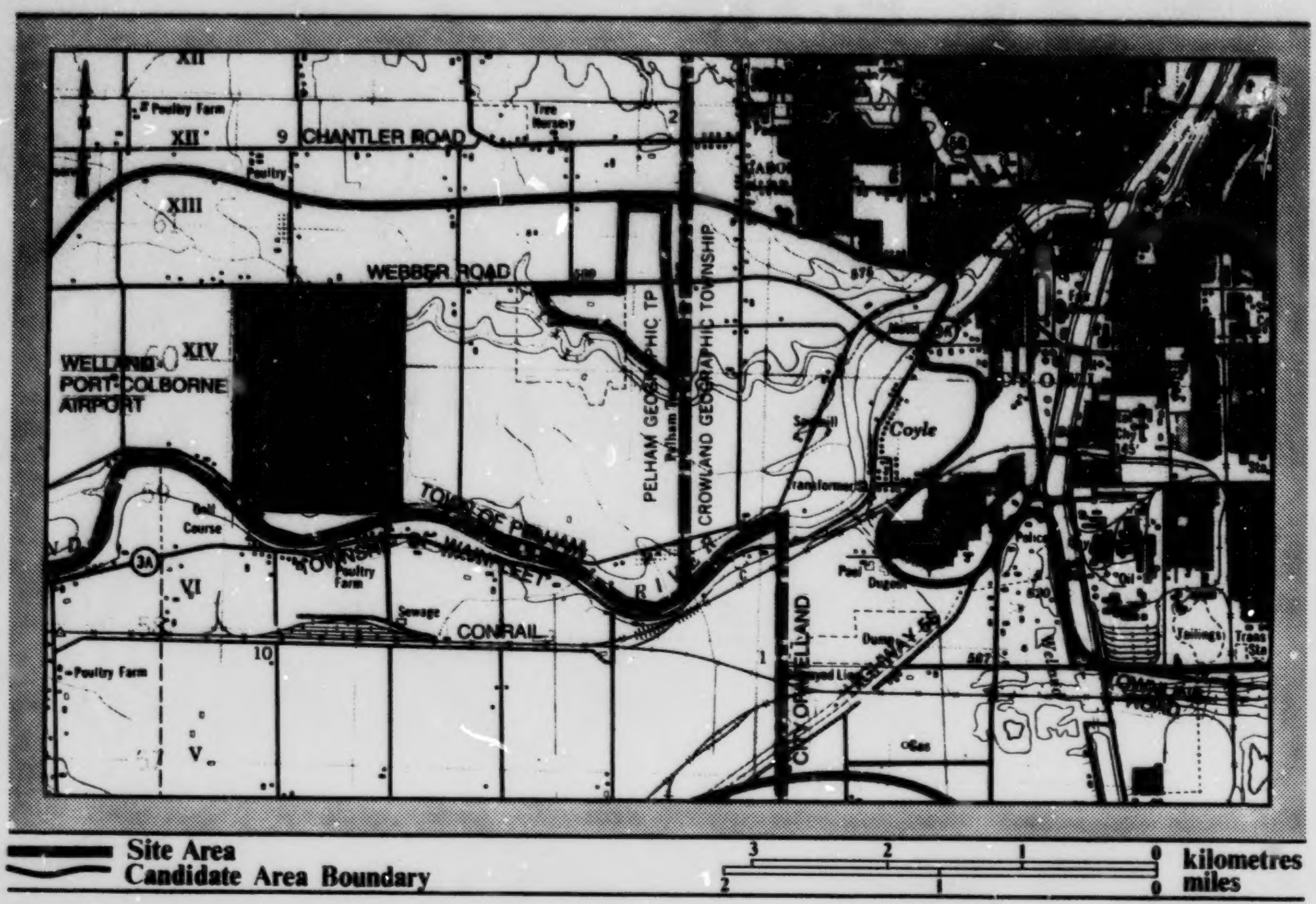
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-35E


XII
Poultry Farm
XII
9
CHANTLER ROAD
Tree Nursery
2
Poultry
XIII
WEBBER ROAD
XIV
WELLAND PORT COLBORNE AIRPORT
PELHAM GEOGRAPHIC TP
Pelham Tp
CROWLAND GEOGRAPHIC TOWNSHIP
Sawmill
Coyle
Transformer
Golf Course
3A
TOWN OF PELHAM
TOWNSHIP OF WAINFLEET
RIVER
VI
Poultry Farm
Sewage
CONRAIL
10
Poultry Farm
V
1
CITY OF WELLAND
Pool
Dump
Gas
Tailings
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

Niagara Region Road 29 crosses the site area.

The remaining constraint-free area is irregularly shaped and is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility in the constraint-free area. However, the technical buffer area would have extended across major transportation facilities or into constrained areas. The site area was therefore dropped from further consideration.

Adjacent Constraints:

Expansion is constrained by a candidate area boundary to the north; Class 1 or 2 row crops or corn-wheat to the west; a floodplain to the south; and an urban residential area (Welland) to the east.

Suitability Screen

1. size ●
2. physical resources ☐
3. biology ☐
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ●

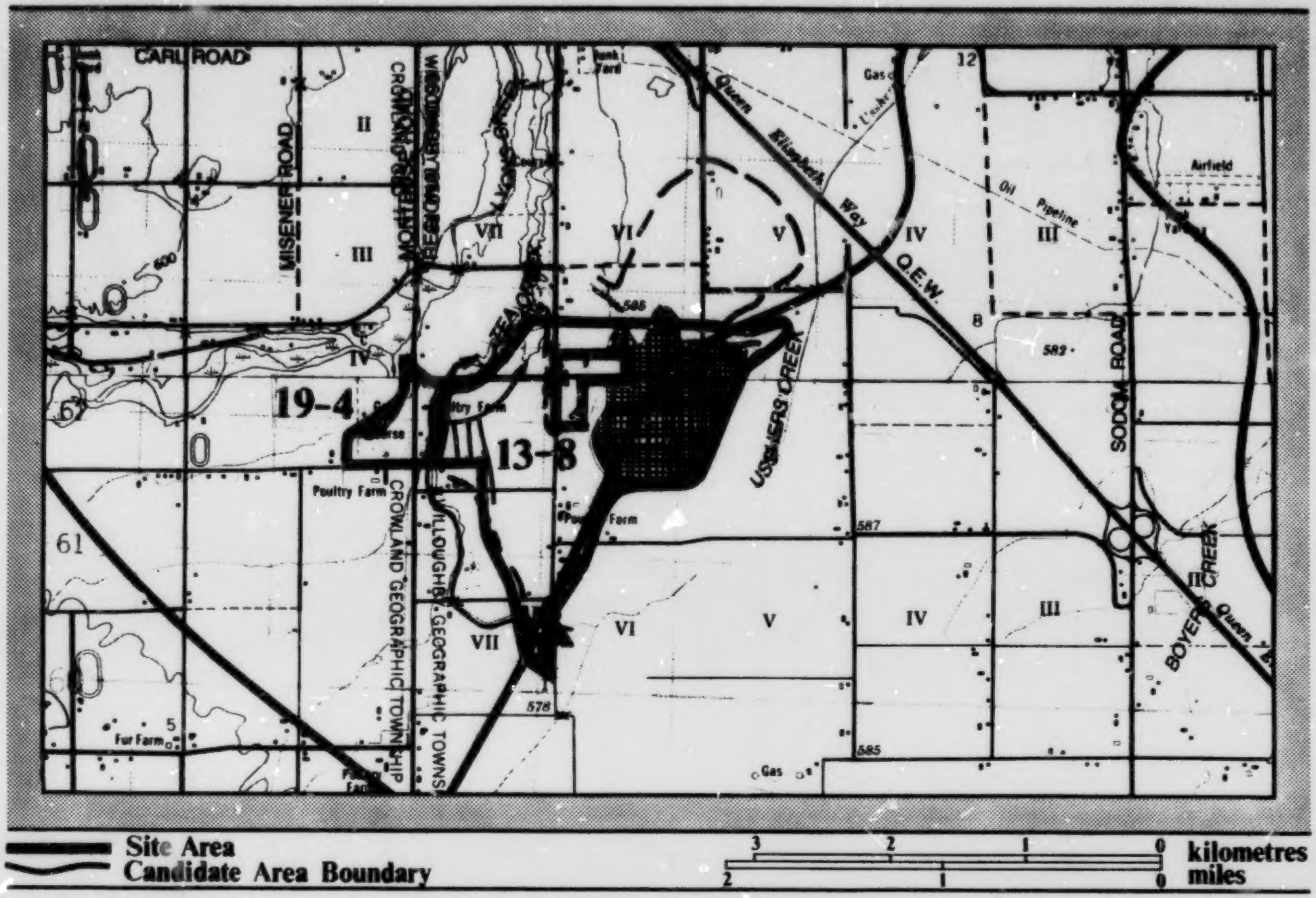
Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

PI-36E


CARL ROAD
MISENER ROAD
CROWLAND GEOGRAPHIC TOWNSHIP
WILLOUGHBY GEOGRAPHIC TOWNSHIP
Queen Elizabeth Way
Q.E.W.
USSHERS CREEK
SODOM ROAD
BOYERS CREEK
Oil Pipeline
Airfield
Poultry Farm
Fur Farm
Gas
19-4
13-8
II
III
IV
V
VI
VII
585
587
578
582
600
Site Area
Candidate Area Boundary
3
2
1
0
kilometres
2
1
0
miles

Site Constraints:

The east portion of the site area conflicts with SEU 13-8. Stream courses and floodplains and Niagara Region Road 98 cross the western portion of the site area. SEU 19-4 is also found in the western portion of the site area.

The remaining constraint-free area is irregularly shaped and is not large enough to accommodate a combined physical/chemical treatment plant and incinerator facility.

Consideration was given to locating the operating area of the facility in the remaining unconstrained area. However, the technical buffer area extended across major transportation facilities or into constrained areas. The site area was therefore dropped from further consideration.

Suitability Screen

1. size ☒
2. physical resources ☒
3. biology ☒
4. land use ☐
5. agriculture ☐
6. social ☐
7. transportation ☒

Compatibility Screen

8. existing land use ☐
9. designated land use ☐

System Screen

10. travel distance ☐
11. access routes ☐

Adjacent Constraints:

Expansion is constrained by Class 1 or 2 pasture, grazing or hay (poor quality), Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) to the north; Class 3 or 4 row crops or corn-wheat and Class 1 or 2 mixed, cereal grain, hay-grain or hay (good quality) and pasture, grazing or hay (poor quality) to the southwest; and by a floodplain to the west, south and east.

PI-37E

Volume

3

Final report

OWMC
Ontario
Waste Management
Corporation

A provincial crown corporation.

DILLON

NEWTR/12
12-17-84

SITE SELECTION PROCESS

PHASE 3B: SELECTION OF CANDIDATE SITES

Site Selection

Volume 3 - Identification of Candidate Sites

December 1984

DILLON
Consulting Engineers & Planners

OUR FILE:
YOUR FILE:

18 December 1984
9494-31

Ontario Waste Management Corporation
2 Bloor Street West
11th Floor
Toronto, Ontario
M4W 3W2

Attention: Dr. B.D. Mitchell,
Director of Corporate
Planning and Development

Site Selection Process - Phase 3B:
Selection of Candidate Sites - Site
Selection - Volume 3 -
Identification of Candidate Sites

Dear Sirs:

We are pleased to submit the final draft of Volume 3 - Identification of Candidate Sites of the Phase 3B Site Selection Report. This volume provides the technical documentation for the process by which the potential sites were compared to produce a short list of candidate sites.

Yours truly,
M.M. DILLON LIMITED

David P. Lawrence, M.C.I.P.
Site Selection Manager

DPL:ch
Encl.

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SITE SELECTION PROCESS

PHASE 3B: SELECTION OF CANDIDATE SITES

Site Selection - Volume 3: Identification of Candidate Sites

TABLE OF CONTENTS

10.0 Introduction 1
- 10.1 Purpose and Scope 1
- 10.2 Volume Format 2

11.0 Candidate Site Identification Process 4

12.0 Identification of Factors and Indicators 8

- 12.1 Major Inputs to Factor and Indicators Identification 8
  - 12.1.1 Site Selection Objectives 8
  - 12.1.2 Facilities Characteristics Assumptions 10
  - 12.1.3 Site Selection Principles 10
  - 12.1.4 Data Collection and Analysis 11
  - 12.1.5 Ranking and Application of Factors and Indicators 11

13.0 Data Collection and Analysis 17

- 13.1 Purpose and Scope 17
- 13.2 The Data Collection and Analysis Process 17

14.0 Ranking of Factors 14

- 14.1 Individual Consultant's Factor Rankings 14
- 14.2 Overall Ranking of Factors 24

15.0 Comparision of Access Route Options 36

- 15.1 Ranking of Factors 36
- 15.2 Ranking of Access Route Options 38
- 15.3 Access Route Options - Application of Factors 40
- 15.4 Conclusions 96

16.0 Application of Factors - Siting Options 99

- 16.1 Factor Application Process 99
- 16.2 Parcel Options - LF-10W, LF-1E, PI-1N 108
  - 16.2.1 Introduction 108
  - 16.2.2 LF-10W 110
  - 16.2.3 LF-1E 111
  - 16.2.4 PI-1N 112

TABLE OF CONTENTS (Cont'd)

16.3 Application of Factors - Siting Options with Level 5 Ratings 113

- 16.3.1 Introduction 113
- 16.3.2 LF-3E 113
- 16.3.3 LF-4N 115
- 16.3.4 LF-8C 117
- 16.3.5 LF-10W/PI-2W and LF-11W/PI-2W 118
- 16.3.6 LF-2N/PI-1A1 119

16.4 Application of Factors - Siting Options with Level 4 Ratings 123

- 16.4.1 Introduction 123
- 16.4.2 LF-10W 123
- 16.4.3 LF-11W 126
- 16.4.4 LF-1C/PI-18E 128
- 16.4.5 LF-1E 130
- 16.4.6 LF-3C and LF-9C 132
- 16.4.7 LF-2N/PI-1N 136
- 16.4.8 LF-1E/PI-27E 141
- 16.4.9 LF-2N/PI-13N 145
- 16.4.10 LF-4N/PI-13N 148

16.5 Application of Factors - Siting Options with Level 3 or Lower Ratings 149

- 16.5.1 Introduction 149
- 16.5.2 LF-4N/PI-1N 149

16.6 Concluding Comments 151

References

List of Figures

Figure 11.1 - Potential Sites

Figure 11.2 - Candidate Site Identification Process

Figure 15.1 - Integrated Site Options - LF-10W/LF-11W - Access Route Options

Figure 15.2 - Integrated Site Option - LF-4N - Access Route Options

Figure 15.3 - Integrated Site Option - LF-3C - Access Route Options

Figure 15.4 - Integrated Site Option - LF-8C - Access Route Options

Figure 15.5 - Integrated Site Option - LF-9C - Access Route Options

Figure 15.6 - Integrated Site Option - LF-1E - Access Route Options

Figure 15.7 - Integrated Site Option - LF-3E - Access Route Options

Figure 15.8 - Partially Integrated Site Options - PI-2W/LF-11W, PI-2W/LF-10W - Access Route Options

Figure 15.9 - Partially Integrated Site Option - LF-2N/PI-1A1 - Access Route Options

Figure 15.10 - Partially Integrated Site Option - LF-4N/PI-13N - Access Route Options

Figure 15.11 - Partially Integrated Site Option - LF-2N/PI-13N - Access Route Options

Figure 15.12 - Partially Integrated Site Option - LF-2N/PI-1N - Access Route Options

Figure 15.13 - Partially Integrated Site Option - LF-4N/PI-1N - Access Route Options

Figure 15.14 - Partially Integrated Site Option - LF-1C/PI-18E - Access Route Options

Figure 15.15 - Partially Integrated Site Option - LF-1E/PI-27E - Access Route Options

Figure 16.1 - Location of Potential Sites

List of Tables

Table 12.1 - Initial Comparative Evaluation Factors and Indicators

Table 14.1 - Summary of Overall Ranking of Factors - Level 1

Table 14.2 - Summary of Overall Ranking of Factors - Level 2

Table 14.3 - Summary of Overall Ranking of Factors - Level 3

Table 14.4 - Summary of Overall Ranking of Factors - Level 4

Table 14.5 - Summary of Overall Ranking of Factors - Level 5

Table 15.1 - Summary Rankings - Access Route Options - LF-4N Integrated

Table 15.2 - Summary Rankings - Access Route Options - LF-3C Integrated

Table 15.3 - Summary Rankings - Access Route Options - LF-8C Integrated

Table 15.4 - Summary Rankings - Access Route Options - LF-9C Integrated

Table 15.5 - Summary Rankings - Access Route Options - LF-1E Integrated

Table 15.6 - Summary Rankings - Access Route Options - LF-3E Integrated

Table 15.7 - Summary Rankings - Access Route Options - LF-2N/PI-1A1

Table 15.8 - Summary Rankings - Access Route Options - P1-13N

Table 15.9 - Summary Rankings - Access Route Options - LF-2N/P1-13N

Table 15.10 - Summary Rankings - Access Route Options - LF-2N/P1-1N

Table 15.11 - Summary Rankings - Access Route Options - LF-1E/PI-18E

Table 15.12 - Summary Rankings - Access Route Options - LF-1E/P1-27E

List of Tables (Cont'd)

Table 16.1 - Comparative Evaluation of Siting Options (Integrated)

Table 16.2 - Comparative Evaluation of Siting Options (Partially Integrated)

Table 16.3 - Rating Given to Each Siting Option

Table 16.4 - Initial Comparative Evaluation - Major Reasons for Retention

Appendix G

Table G.1 - Relationship of Objectives to Candidate Site Identification Factors

Table G.2 - Initial Comparative Evaluation - Identification of Objectives not Considered

Table G.3 - Role of Facilities Characteristics in Candidate Site Identification

Table G.4 - Role of Site Selection Principles in Candidate Site Identification

Table G.5 - Initial Comparative Evaluation Factors and Indicators - Definition and Significance

Table G.6 - Factors Excluded from Rating of Siting Options

Appendix H

Table H.1 - Consultants' Ranking of Factors - Candidate Site Identification - Site/Site Vicinity Factors and Indicators

Appendix I

Table I.1 - Consultants' Ranking of Factors - Access Road Factors and Indicators

Appendix J

Table J.1 - Integrated LF-4N - Access Routes
Table J.2 - Integrated LF-3C - Access Routes
Table J.3 - Integrated LF-8C - Access Routes
Table J.4 - Integrated LF-9C - Access Routes
Table J.5 - Integrated LF-1E - Access Routes
Table J.6 - Integrated LF-3E - Access Routes
Table J.7 - Partially Integrated to PI-1A1 - Access Routes
Table J.8 - Partially Integrated - PI-1A1 to LF-2N - Access Routes
Table J.9 - Partially Integrated - to PI-13N - Access Routes
Table J.10 - Partially Integrated - PI-13N to LF-2N - Access Routes
Table J.11 - Partially Integrated - to PI-1N - Access Routes
Table J.12 - Partially Integrated - PI-1N to LF-2N - Access Routes
Table J.13 - Partially Integrated - to LF-1C - Access Routes
Table J.14 - Partially Integrated - to PI-18E - Access Routes
Table J.15 - Partially Integrated - to PI-27E - Access Routes

Appendix K

Table K.1 – Comparative Evaluation of Siting Options - Site

Table K.2 – Comparative Evaluation of Siting Options - Site Vicinity

Table K.3 – Preferred Access Route Options

NEWTR-12.1
12-17-84

10.0 INTRODUCTION

10.1 PURPOSE AND SCOPE

This volume represents the third of a four volume report. This entire report documents the process by which candidate sites were selected within the candidate areas.

- o Volume 1 describes the Phase 3B site selection process and the principles, goals, objectives, factors and the general assumptions of facility characteristics which guided that process. Volume 1 also documents the process by which site areas were identified within the candidate areas;
- o Volume 2 documents the process employed to identify potential sites within the site areas.
- o Volume 3 (this volume) documents the process by which the potential sites were compared to produce a short list of candidate sites;
- o Volume 4, a map portfolio, contains the major maps which support Volumes 1, 2 and 3.

This report both builds upon the Step 1 (identification of geographic region) and Step 2 (identification of candidate areas) site selection work and represents an elaboration of the overview to Step 3 (identification of candidate sites) of the site selection process provided in the OWMC Phase 3 Report (1984a) and the Appendix to OWMC Phase 3 Report (1984b).

M.M. Dillon Limited was technically responsible for the coordination and synthesis of the Phase 3B site selection activities carried out by a team of consultants specializing in hydrogeologic, surface drainage, biological, land use, socio-economic, air quality, agricultural, transportation and engineering concerns.

The consultants' role in this process was to assist OWMC through data collection and analysis. The consultants also participated in the formulation of recommendations regarding factors, factor rankings[1], factor application and in the technical documentation of candidate site identification. The consultants and the OWMC staff jointly participated in the ranking and application of factors.

Each consulting firm prepared a separate technical report documenting its specific contributions to the site selection process.

This report represents the integration of those contributions. Therefore, any limitations or qualifications identified in individual technical reports also apply to this report.

This report incorporates contributions received through the public consultation and facilities development program (see References for a list of OWMC documents and materials considered). Reference should be made to those documents for further details regarding the work undertaken by the other site selection consultants and for work undertaken by or on behalf of OWMC.

10.2 VOLUME FORMAT

This volume consists of seven chapters:

- Chapter 10 (this chapter) is the Introduction;

---

[1] Factors were ranked in terms of their relative suitability for the establishment of facility components.

- Chapter 11 describes the steps within the third stage in the candidate site identification process (the identification of candidate sites) and the rationale for those steps;

- Chapter 12 describes the process by which the candidate site identification factors and indicators[1] were identified and provides the rationale for each;

- Chapter 13 describes the general data collection and analysis methods employed and the rationale for those methods;

- Chapter 14 describes the methods employed for the ranking of factors and the reasoning behind those methods;

- Chapter 15 documents the manner in which the factors and indicators were employed to progressively identify preferred access roads for each potential site;

- Chapter 16 documents the manner in which the factors and indicators were employed to progressively review parcel[2] and then siting options and to identify candidate sites. The rationale behind the application of the site selection factors and indicators is also provided.

The appendices which support this volume are provided at the back of this volume.

---

[1] Indicators are a more precise measure or means of describing a factor. Thus for the factor agricultural resources along local access roads, one indicator is the number of active building complexes along the route and another indicator is an estimate of the livestock population within a 2 km band adjoining the route.

[2] Parcel options are different portions of a site potentially suitable for the establishment of facility components. If one parcel option were selected, the site would be reduced in size by excluding the less suitable portions of the site.

11.0 CANDIDATE SITE IDENTIFICATION PROCESS

The candidate site identification process began after the potential site identification process had reduced the number of potential site areas to sixteen - ten landfill sites and six physical/chemical treatment/incinerator plant sites (Figure 11.1). These sixteen sites were combined into eight integrated and ten partially integrated siting options[1] [2].

The process employed to identify candidate sites is depicted in Figure 11.2. Factors and indicators were identified by the site selection team based on a review of site selection goals, objectives and factors, the factors employed in previous steps and facilities characteristics assumptions. The data necessary to compare the siting options were then collected by the other site selection consultants. As indicated in Figure 11.2, the process of collecting and analyzing data led to some refinements in the candidate site identification factors.

Factors were ranked in a two-step process. Initially, the factors were ranked within disciplines by the consultants responsible. These individual consultant's rankings were then combined by the site selection team into an overall ranking of factors.

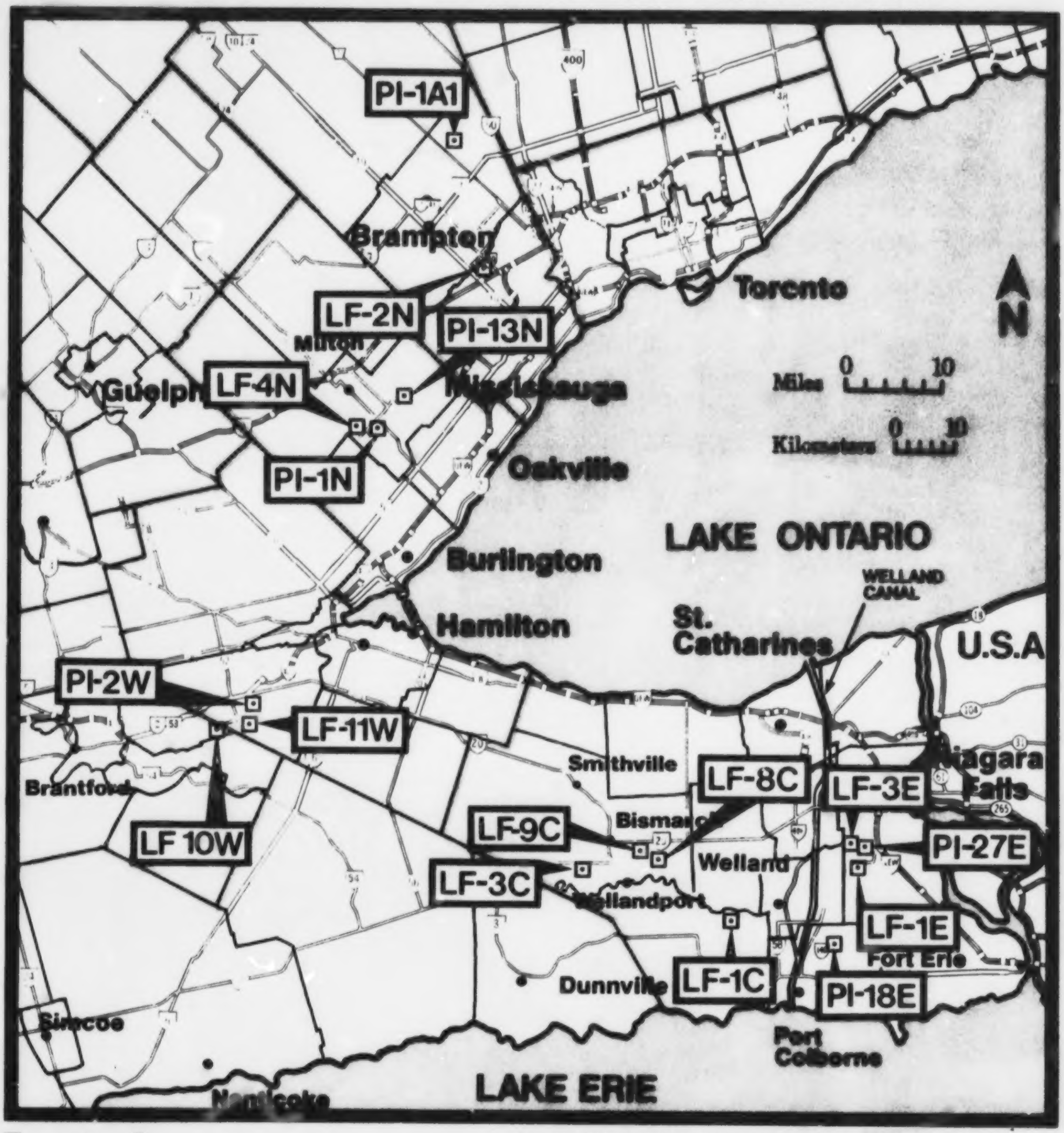
The comparative evaluation of siting options took place in a series of steps. A comparative analysis of access route and parcel options was undertaken in order to refine the definition of each siting option.

---

[1] A siting option is composed of a site (in the case of a fully-integrated facility arrangement) or sites (in the case of partially-integrated facility arrangements) together with the local and regional access routes to (and between) the sites.

[2] The composite matrices prepared during initial comparative evaluation record seventeen siting options - eight integrated and nine partially-integrated. One partially-integrated option LF-3E/P1-27E was rejected early during the initial comparative evaluation stage (as a result of the exclusion of LF-3E) and no data were recorded in the composite matrices.

Figure 11.1 Potential Sites CANDIDATE SITE IDENTIFICATION


PI-1A1
Brampton
Toronto
N
LF-2N
PI-13N
Milton
Guelph
LF4N
Mississauga
Miles 0 10
Kilometers 0 10
PI-1N
Oakville
LAKE ONTARIO
Burlington
WELLAND CANAL
Hamilton
St. Catharines
U.S.A
PI-2W
LF-11W
Niagara Falls
Smithville
LF-8C
LF-3E
Brantford
Bismarck
LF 10W
LF-9C
PI-27E
Welland
LF-3C
Wellandport
LF-1E
Fort Erie
Dunnville
LF-1C
PI-18E
Simcoe
Port Colborne
LAKE ERIE
Nanticoke

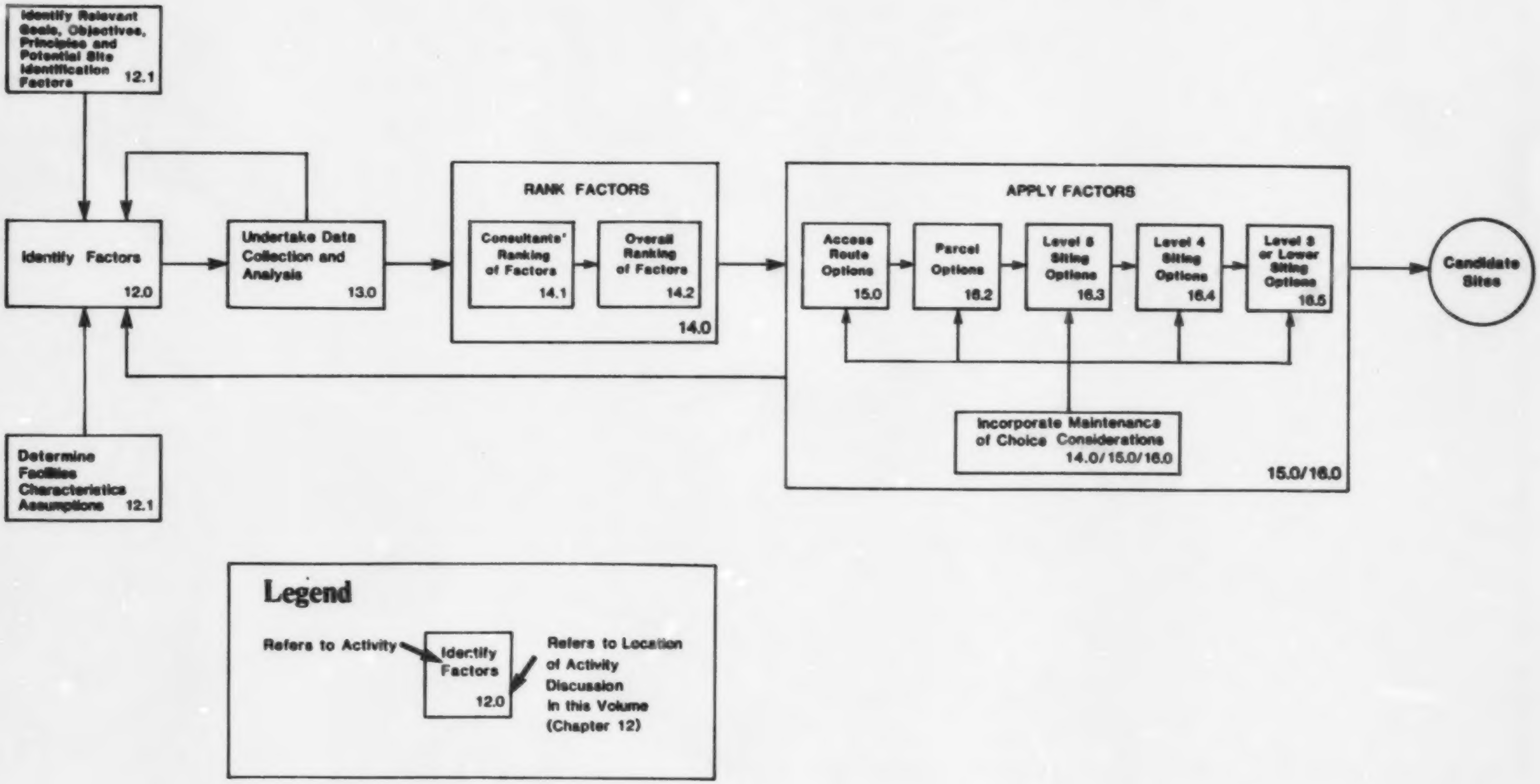
Legend

- ⊡ Potential Site
- Regional Municipal & County Boundaries
- ___ Township, Town & City Boundaries
- LF Landfill
- PI Physical/Chemical Treatment Plant & Incineration

Source: Ontario Waste Management Corporation. March, 1984.
Note: Symbols indicate location only, and not size or shape of sites.

Site Name	Landfill	Physical/ Chemical	Incinerator	
LF-2N	•	•		
LF-4N	•	•	•	Integrated
LF-10W	•	•	•	Integrated
LF-11W	•	•	•	Integrated
LF-1C	•			
LF-3C	•	•	•	Integrated
LF-8C	•	•	•	Integrated
LF-9C	•	•	•	Integrated
LF-IE	•	•	•	Integrated
LF-3E	•	•	•	Integrated
PI-1A1		•	•	
PI-1N		•	•	
PI-13N		•	•	
PI-2W		•	•	
PI-18E		•	•	
PI-27E		•	•	

Figure 11.2 CANDIDATE SITE IDENTIFICATION PROCESS


Identify Relevant Goals, Objectives, Principles and Potential Site Identification Factors 12.1
Identify Factors 12.0
Determine Facilities Characteristics Assumptions 12.1
Undertake Data Collection and Analysis 13.0
RANK FACTORS
Consultants' Ranking of Factors 14.1
Overall Ranking of Factors 14.2
14.0
APPLY FACTORS
Access Route Options 15.0
Parcel Options 16.2
Level 5 Siting Options 16.3
Level 4 Siting Options 16.4
Level 3 or Lower Siting Options 16.5
Incorporate Maintenance of Choice Considerations 14.0/15.0/16.0
15.0/16.0
Candidate Sites
Legend
Refers to Activity
Identify Factors 12.0
Refers to Location of Activity Discussion In this Volume (Chapter 12)

Rating of siting options[1] was then developed by each of the site selection consultants based on an analysis of their data together with the overall ranking of factors. The overall site option ratings were, in turn, used to structure the initial comparative evaluation of siting options. The rationale for conclusions also drew upon detailed differences in site, site vicinity and access route risks and impacts as well as the desire to maintain a diversity of siting opportunities.

The product of this process was a series of candidate sites suitable for more detailed analysis during the next stage in the site selection process - detailed comparative evaluation (Phase 4A).

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[1] Siting options were initially rated at various levels of suitability by the individual consultants. The individual consultant site option ratings were then combined into an overall rating system ranging from most (Level 1) to least (Level 5) suitable for the establishment of facility components.

12.0 IDENTIFICATION OF FACTORS AND INDICATORS

12.1 MAJOR INPUTS TO FACTOR AND INDICATORS IDENTIFICATION

The factor identification process began with a preliminary identification of possible factors by the site selection consultants. Each factor was subdivided into indicators. Where appropriate, distinctions were made among factors and indicators which pertained to the site, the vicinity of the site (an area extended 1000[1] metres outward from the potential emissions area of each potential PI site or PI component of a fully integrated site and 500[1] metres outward from each landfill) and the local and regional access roads to the site. These preliminary factor and indicator lists were discussed in working meetings of the site selection team.

The process of factor and indicator identification considered:

- the desire to satisfy as many of the site selection objectives as possible;
- the nature of the proposed facilities as defined by the facilities characteristics assumptions;
- the site selection principles;
- the results of the data collection and interpretation;
- the analysis undertaken through the course of factor application.

12.1.1 SITE SELECTION OBJECTIVES

As inputs to this process, Dillon's site selection staff prepared tables which explored the relationship of goals and objectives to the candidate site identification factors and indicators.

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[1] The rationale for the selection of the 1000 metre and 500 metre study areas is detailed in: M.M. Dillon Limited (1984a) Site Selection Process Phase 3B: Selection of Candidate Sites - Facilities Development and Technical Buffer Zones.

Table G.1 in Appendix G identifies which site selection objectives were considered appropriate for use in candidate site identification as well as which factors relate to which site selection objectives. A series of reasons why each factor was selected is also provided. The reasons why particular objectives were addressed pertain to such considerations as:

- the magnitude of potential risks, impacts and costs;
- the possibility of addressing the objective through data refinements, roadside field investigations in the vicinity of the site and along access roads to the site;
- the objective could be mapped at a scale of 1:10,000;
- the objective was suitable for initial comparative analysis; a lower priority was attached to objectives which were unlikely to vary substantially from site to site;
- the objectives reflected a public concern identified through the public consultation program.

Table G.2 in Appendix G identifies which site selection objectives were not addressed in the candidate site identification process. Summary reasons concerning why it was considered more appropriate to address those objectives at subsequent stages in the site selection process are also provided in Table G.2.

The major reasons why objectives were not addressed included:

- a very detailed comparative evaluation would have been required to establish major differences among sites; sufficient data concerning the options was available and such analyses were not considered necessary at this stage.
- engineering analyses involving, for example, facility layouts and detailed data on waste characteristics, emissions and sources

would have been required; such analyses were not considered necessary to select a short list of candidate sites from among the potential sites;

- detailed interviews with residents, owners, businesses, community leaders and local officials and representatives would have been necessary to adequately address the objective; such analyses were not considered necessary to select a short list of candidate sites from among the potential sites;

- on-site field investigations and detailed investigations in the vicinity of the site would have been required to adequately address the objective; such analyses were not considered necessary to select a short list of candidate sites from among the potential sites;

- the potential impacts might be overcome or substantially reduced through mitigative measures;

- the objective had been addressed in previous stages of the site selection process.

12.1.2 FACILITIES CHARACTERISTICS ASSUMPTIONS

As further input to the factor and indicator identification process was the consideration of the relationship of potential factors and assumed facilities characteristics. The relationship of facilities characteristics assumptions and candidate site identification is highlighted in Table G3.

12.1.3 SITE SELECTION PRINCIPLES

The site selection principles also contributed to the determination of candidate site identification factors and indicators.

The roles of these principles in candidate site identification are highlighted in Table G.4 in Appendix G.

12.1.4 DATA COLLECTION AND ANALYSIS

The preliminary list of candidate site identification factors was further refined and modified during the course of data collection and analysis.

12.1.5 RANKING AND APPLICATION OF FACTORS AND INDICATORS

The factors and indicators which were incorporated into the composite matrices comparing access routes and siting options are listed in Table 12.1. Table G.5 in Appendix G provides a summary definition and a description of the significance of each of these candidate site identification factors and indicators as prepared by the other site selection consultants. Factor significance was interpreted in terms of relevance to the site selection goals of minimizing risk to human health, minimizing environmental impact and minimizing costs to OWMC.

These detailed matrices provided the data base which was used in the ranking of factors and the rating of siting options.

As indicated in Table G.6 in Appendix G, a number of factors and indicators which had been identified for use during candidate site identification were not employed. The reasons why the site selection team concluded that such factors and indicators should not be employed for the rating of siting options included the following:

- feature not present on site, in the vicinity of the site or along access routes to the site;
- minor consideration not expected to influence the relative priority attached to different siting options;
- magnitude of potential risk, impact or cost too small to represent significant siting consideration;
- minimal differences among sites;
- incomplete data base;
- readily mitigatible.

TABLE 12.1

INITIAL COMPARATIVE EVALUATION FACTORS AND INDICATORS[1]

A. SITE

1. Human Environment

1.1 Existing Residents
- number of people displaced (estimated population)
- number of residences displaced

1.2 Existing Resources
- number of farm building complexes-average and above average
- cultivated land (ha)
- urban shadow
- historical resources
- archaeological resources potential
- aquifers

1.3 Existing Community and Recreation Features
- public community features - number and type
- public recreation features - number and type
- private community features - number and type
- private recreation features - number and type

1.4 Existing Commercial and Industrial Uses
- commercial facilities - number and type
- industrial facilities - number and type

1.5 Future Residents
- projected population levels
- approved residential plans of subdivision
- residential land use designation (official plan)
- residential zoning
- residential development proposals

1.6 Future Resources
- class 1 agricultural land equivalents (as % of site size)
- rural/agricultural land use designation
- provincial planning areas

1.7 Future Commercial and Industrial Uses
- planned and proposed commercial facilities
- planned and proposed industrial facilities

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[1] The factors listed in this table are defined in Table G.5 of this volume.

TABLE 12.1 (Cont'd)

2. Physical and Biological Environment (site and site vicinity)

   2.1 Hydrogeology (Natural Containment Potential)
   - regional category
   - thickness of confining layer
   - geologic predictability
   - material texture
   - oil and gas wells

   2.2 Biology
   - SEUs
   - non-SEU woodlots > 20 ha.
   - other vegetation
   - aquatic habitat
   - terrestrial wildlife habitat
   - local setting

   2.3 Atmospheric Conditions
   - existing air quality
   - topography
   - receptors

3. Costs

   3.1 Land Acquisition
   - land value
   - land fragmentation
   - land ownership (public)

   3.2 Site Improvements
   - surface drainage

   3.3 Utilities, Roads, Airports
   - utility transmission lines re-routing
   - road closures required
   - airport - smokestack height conflict (incinerator)

   3.4 Site Size and Configuration
   - total area (acres) (ha)

B. FACTORS IN SITE VICINITY

1. Human Environment

   1.1 Existing Residents
   - number of people (estimated population)
   - number of residences

TABLE 12.1 (Cont'd)

1.2 Existing Resources
  - number of farm building complexes, average or above average with land in 500 m and 1000 m zones
  - sensitive crops (within 5 km radius - $/ha)
  - livestock populations (within 5 km radius - #/40 ha)

1.3 Existing Community and Recreation Features
  - public community features - number and type
  - public recreation features - number and type
  - private community features - number and type
  - private recreation features - number and type
  - known archaeological and historical sites

1.4 Existing Community Character
  - land use pattern
  - social and economic character

1.5 Future Residents
  - projected population levels
  - approved residential plans of subdivision
  - residential land use designations
  - residential zoning
  - residential development proposals

1.6 Future Resources
  - predominant soil capability class
  - rural/agricultural designation

1.7 Existing Commercial and Industrial Uses
  - commercial facilities - number and type
  - industrial facilities - number and type

1.8 Future Commercial and Industrial Uses
  - planned and proposed commercial facilities
  - planned and proposed industrial facilities

2. Costs (Offsite)/Operations

2.1 Proximity to Rail Access (to P1 or integrated sites)

C. ACCESS ROADS - LOCAL

1. Human Environment

1.1 Transportation Safety
  - proximity to arterial road
  - difficulty of access (number of level railway crossings)

TABLE 12.1 (Cont'd)

1.2 Existing Residents
- number and size of population concentrations
- number of residences (housing)
- estimated population along access roads
- distance through strip residential development (km)

1.3 Existing Resources
- number of active farm building complexes
- livestock populations (within 2 km band) (000s)

1.4 Existing Community and Recreation Features
- community features - number and type
- recreation features - number and type

1.5 Future Residents
- distance through residential land use designations (km)

1.6 Future Resources
- length across Class 1 equivalent agricultural land (km)

1.7 Existing Commercial and Industrial Uses
- distance through commercial areas (km)
- distance through industrial areas (km)

1.8 Future Commercial and Industrial Uses
- distance through designated commercial areas (km)
- distance through designated industrial areas (km)

2. Physical and Biological Environment

2.1 Hydrogeology
- length of sensitive lands crossed (m)

2.2 Stream Crossings
- number of stream crossings and constraint rating

D. ACCESS ROADS - REGIONAL

1. Human Environment

1.1 Transportation Safety
- transportation accident frequency (accidents/million vehicles-for routes from waste source, and from 400-series Hwy to site)
- distance to freeways
- total number of level railway crossings
- number of intersections where a turn is required

TABLE 12.1 (Cont'd)

1.2 Existing Residents
  - distance through strip residential development (km)
  - number of communities by population
  - estimated population along access routes

1.3 Existing Resources
  - number of active farm building complexes
  - sensitive crops ($ 000s)
  - livestock populations (000s)

1.4 Existing Community and Recreation Features
  - number and type of community and recreation features

2. Physical and Biological Environment

2.1 Hydrogeology
  - length of sensitive lands crossed (m)

2.2 Stream Crossings
  - number of stream crossings and constraint rating

13. DATA COLLECTION AND ANALYSIS

13.1 PURPOSE AND SCOPE

The potential site identification work had resulted in the identification of sixteen potential sites. The purpose of the data collection and analysis work undertaken in candidate site identification was to provide an information base sufficient to identify a small number of sites from among the sixteen potential sites which could be subjected to a very detailed comparative evaluation (Phase 4A).

The data collection and analysis process involved refinements to existing data as well as the collection of additional site, site vicinity, access road and community and regional data. The analysis was undertaken by a range of specialists from the other site selection consultant firms in such fields as hydrogeology, surface drainage, biology, air quality and dispersion, historical and archaeological resources, agriculture, land use, land ownership and land value, social concerns and transportation and utilities.

13.2 THE DATA COLLECTION AND ANALYSIS PROCESS

The data collection and analysis process included:

- a review of secondary source data, e.g. agricultural statistics, population statistics, accident statistics, water well records, meteorological, emissions and air quality data, available land tenure and land value data, historical and archaeological data, archives and files, official plans, zoning by-laws and development applications and existing flood plain mapping;

- agency contacts, e.g. Transport Canada, Ministry of the Environment, Ministry of Agriculture and Food, Ministry of

Citizenship and Culture, Regional Assessment Offices, Ministry of Natural Resources, Ministry of Transportation and Communications, Ontario Hydro, a range of other federal and provincial agencies, local conservation authorities, regional and local municipal departments, private utilities and railway companies and provincial agricultural agencies;

- air photo and topographic map interpretation for purposes of identifying and analyzing hydrogeologic, surface drainage, biological, land use, archaeological and agricultural features and facilities;

- roadside field investigations to cross-check secondary source data, refine previously collected data and to obtain additional data pertaining to terrain features which may have a bearing on hydrogeologic conditions, surface drainage, agricultural use, population, community and recreation facilities, land use and land value, heritage and archaeological resources, constraints to air dispersion, utility and road realignment requirements and access road requirements.

The data collected were analyzed and synthesized in a variety of ways including:

- the use of models, e.g. transportation, air dispersion;

- the preparation of individual and composite maps;

- the analysis of siting options in terms of a series of site, site vicinity and access road indicators which were incorporated into composite matrices.

Once the data from each of the other site selection specialist consultants were assembled, analyzed and synthesized by Dillon's site selection staff, they were employed by the site selection team to rank factors, compare access route and parcel options and to rate the siting options. The rating of siting options, as well as the consultants' data, in turn provided the basis for the site selection team's recommendations regarding candidate sites.

The other Phase 3B consultants' technical reports provide a more detailed description of the data collection and analysis undertaken during candidate area identification.

14.0 RANKING OF FACTORS

14.1 INDIVIDUAL CONSULTANT'S FACTOR RANKINGS

As in the previous stages in the site selection process, the site selection team recognized that not all the factors were equal in importance and that it would be desirable to rank factors to the extent possible.

The site selection goals, objectives and principles (See Section 2.3 in Volume 1) were initially reviewed to assist in the ranking process. The factors were ranked by the site selection team in terms of the relative severity of risks, impacts and costs. The role of the site selection principles in factor ranking is indicated in Table G.4 in Appendix G.

Risk-related factors tended to be ranked higher than impact-related factors and impact-related factors tended to be ranked higher than cost-related factors. There were, however, instances where a very severe impact might be considered as important as a very remote or limited risk. Similarly, there were instances where a very substantial cost would be considered as important as a relatively minor impact or risk.

In the ranking process, risk was addressed in terms of:

- the likelihood of events, e.g. transportation accidents;
- the provision of a second level of protection, e.g. natural containment potential;
- the potential magnitude of exposure of people, crops and livestock in the event of a release.

Impacts were considered in terms of a wide range of physical, natural environmental, resource, land use, social, and transportation impacts. No attempt was made to treat one type of impact as more important than another.

In developing their factor rankings, the site selection consultants were requested by the site selection coordinating consultant (Dillon) to attempt where possible to distinguish among factors which:

- represented positive or very minor siting constraints in any of the following senses - provision of a second level of protection, public and workshop preference, absence or relatively lowest level of constraint, positive siting consideration, land use compatibility;

- constituted minor siting considerations in any of the following senses - relatively minor constraint, positive siting consideration but less desirable than Level 1 factors, provides second level of protection but not to same extent as Level 1, constraint but readily mitigatible;

- represented moderate constraints to siting in any of the following senses - moderate constraint, constraint but mitigatible or potentially mitigatible, insufficient information to warrant site rejection and data base sufficient for comparative analysis but not generally adequate for siting option rejection either alone or in combination;

- represented major adverse impacts or risks in any of the following senses - major constraint but potentially acceptable, exclusionary potential but need to consider within context of other potential siting option ratings, major land use, social or agricultural conflict;

- constituted severe potential risks in any of the following senses - failure to provide second level of protection, low likelihood of suitability and detailed field investigations not warranted to confirm suitability, adequate data base without reference to other siting option constraints and ratings to warrant siting option rejection.

The consultants' factor ranking process began with a detailed set of tables - Tables K.1 to K.3 in Appendix K prepared by Dillon's site selection staff. These tables, which were compiled from inputs provided from the other site selection consultants, compared the siting options in terms of the factors and indicators listed in Table 12.1.

The next step taken in the factor ranking process was the inspection by the site selection consultants of the range of potential risks, impacts and costs as represented in the body of the tables. In the event that these distributions illustrated either that the magnitudes of potential risks, impacts and costs were very small for all siting options or that there were very limited differences among the siting options (at the initial comparative evaluation level of detail) the relevant indicators were excluded from the ranking process.

The range of risks, impacts and costs associated with the remaining factors and indicators were then reviewed and grouped by the other site selection consulting firms into a small number of levels. The actual number of levels identified by each consultant varied depending on the extent to which clear distinctions could be made in levels of relative suitability.

In some cases, it was possible to place a factor directly into one of the levels. In other cases, the range of values encompassed by a given indicator was sufficiently broad that it could be placed into more than one level. The range of values for such indicators was then reviewed and, based on an assessment of the range and frequency distribution of the indicator, the indicator was subdivided and placed at different levels. With quantitative indicators the boundaries of levels could be defined quantitatively. However, in many instances, the distribution was more qualitative in nature and the differences among levels were described in written form.

Factors and indicators were only grouped into levels of constraint to the extent that the data permitted. Thus, where there were relatively subtle differences among factors and indicators, they were placed at the same level.

With some factor rankings, it was necessary to distinguish between facility types - ie. landfill/integrated and physical/chemical and incinerator facilities. Facility types were not ranked as they were considered of equal importance. However, the general preference for fully integrated facilities over partially integrated facilities was reflected in the application of the rankings (see Chapters 15 and 16).

For some factors it was necessary to draw distinctions among site, site vicinity, local access road and regional access road factors and indicators. With some factors, geographic subdivisions were considered of equal importance. However, with other factors one geographic area (e.g. site vicinity) in the case of hydrogeology was considered more important than another study area (e.g. access roads). These differences, where they existed, were reflected in the factor rankings.

Although the factor rankings reflected the distribution of values within factors and indicators it was recognized by the site selection team that any given siting option was unlikely to fit precisely into any one factor level. In many instances the different indicators would tend to place a siting option at more than one level. Thus it was recognized that all the indicators which pertained to a particular siting option would have to be reviewed and a determination made as to which factor level most directly approximated the siting option.

Table H.1 and H.2 in Appendix H indicate the rankings of the factors as prepared by the consultants together with the summary reasons for these rankings for the site, site vicinity and access road factors and indicators respectively.

14.2 OVERALL RANKING OF FACTORS

The basis for the development of an overall ranking by the site selection team was the individual consultants' rankings. Five levels of suitability were established.

Level 1 factors, as indicated in Table 14.1, represented positive or very minor siting constraints in the following ways:

- provision of a second level of protection;
- absence or lowest level of relative constraint;
- positive siting consideration;
- land use compatibility.

The Level 2 factors, as indicated in Table 14.2, represented relatively minor constraints in the following ways:

- provision of a second level of protection but not to same extent as Level 1;
- constraint but readily mitigatible;
- relatively minor constraint;
- positive siting consideration but less desirable than Level 1 factors.

The Level 3 factors, as indicated in Table 14.3, represented moderate constraints to siting in any of the following ways:

- moderate constraint;
- constraint but mitigatible;
- insufficient information to warrant site rejection;
- constraint sufficient for comparative analyses but not generally adequate for siting option rejection either alone or in combination.

The Level 4 factors, as indicated in Table 14.4, represented major adverse impacts or risks in any of the following ways:

- major impact;
- major land use, social or agricultural conflict;
- major impact but potentially acceptable;
- potentially exclusionary but need to consider within the context of other potential siting option ratings.

The Level 5 factors, as indicated in Table 14.5, represented relatively severe risks. The restriction of Level 5 factors to risk-related concerns reflected the general ranking of the goal of minimizing risk to human health over the goal of minimizing environmental impact. Relatively severe risks were addressed by the factors in any of the following senses:

- failure to provide second level of protection;
- relatively severe risk;
- low likelihood of suitability and detailed field investigations not warranted to confirm suitability.

As described in Chapter 15, it was also necessary to compare access road options. The ranking of access road factors is described in Chapter 15. The manner in which the factor ranking system was employed to identify candidate sites is described in Chapter 16.

TABLE 14.1

Summary of Overall Ranking of Factors - Level 1

Level 1[1]	Area of Responsibility	Consultant	Consultants' Ranking/Level	Major Reasons for Ranking/Comments
	° Physical Resources	Gartner Lee Associates Ltd.	Level 1	° Provides second level of protection
	° Surface Drainage	Gartner Lee Associates Ltd./ M.M. Dillon Ltd.	Level 1	° Provides second level of protection ° Absence or relative absence of constraint
	° Natural Environment	Gartner Lee Associates Ltd.	No Site Constraints No or Minor Access Route Constraints	° Access road constraints considered less important than site constraints
	° Air Dispersion/ Air Quality - Dispersion, Air Quality and Local Receptors	Ontario Research Foundation	No Constraint	° No constraint to siting
	° Air Dispersion/ Quality - Sensitive Crops and Livestock	Ecologistics Ltd.	Low	° Lowest level of relative constraint
	° Air Dispersion/ Air Quality - Regional Population - within 5 Kilometres	Institute of Environmental Research Inc.	Population Range 1	° Lowest level of relative constraint
	° Agricultural Resources	Ecologistics Ltd.	Site - Low, Site Vicinity - Low, Local Access - Low, Regional Access Roads - Low	° Lowest level of relative constraint

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[1] The numbers 1 to 5 correspond to the overall rating levels ranging from the most (Leve 1) to the least favourable (Level 5) for the establishment of the facility components.

TABLE 14.1 (Cont'd)

Summary of Overall Ranking of Factors - Level 1

Level 1[1]	Area of Responsibility	Consultant	Consultants' Ranking/Level	Major Reasons for Ranking/Comments
	• Archaeological Resources	Museum of Indian Archaeology	Low	° Absence of constraint
	° Socio-Economic Impacts	Institute of Environmental Research Inc.	Community Character - Most Compatible Population - On Site and Site Vicinity - Rank 1 Community and Recreation Features - Rank 1 Access Routes - Rank 1	° Positive siting considerations ° Lowest level of relative constraint
	• Land Use/Land Ownership	Marshall Macklin Monaghan Ltd./ Leon Kentridge Associates Ltd.	Low constraint	° Positive siting considerations ° Lowest level of relative constraint
	• Transportation and Utilities	M.M. Dillon Ltd.	Site - Low Site Vicinity - Low Regional Access - Low	° Lowest level of relative constraint

TABLE 14.2

Summary of Overall Ranking of Factors - Level 2

Level 2	Area of Responsibility	Consultant	Consultant's Ranking/Level	Major Reasons for Ranking/Comments
	° Physical Resources	Gartner Lee Associates Ltd.	Level 2	° Provides second level of protection but not to same extent as Level 1
	° Surface Drainage	Gartner Lee Associates Ltd./ M.M. Dillon Ltd.	Level 2	° Provides second level of protection ° Constraint mitigatible
	° Natural Environment	Gartner Lee Associates Ltd.	Minor site Constraint Moderate Access Route Constraints	° Relatively minor constraint; ° Access routes constraints less significant than site constraints
	° Air Dispersion/Air Quality - Dispersion, Air Quality and Local Receptors	Ontario Research Foundation	Minor Constraint	° Minor constraint ° Mitigatible
	° Air Dispersion/Air Quality - Sensitive Crops and Livestock	Ecologistics Ltd.	Moderately Low	° Relatively minor constraint
	° Air Dispersion/Air Quality - Regional Population within 5 km	Institute of Environmental Research Inc.	Population Range 2	° Relatively minor constraint
	° Agricultural Resources	Ecologistics Ltd.	Site - Moderately Low Site Vicinity - Moderately Low Local Access Roads - Moderate Regional Access Roads - Moderate	° Relatively minor constraint ° Site and site vicinity factors considered more important than access road factors

TABLE 14.2 (Cont'd)

Summary of Overall Ranking of Factors - Level 2

Level 2	Area of Responsibility	Consultant	Consultant's Ranking/Level	Major Reasons for Ranking/Comments
	° Archaeological Resources	Museum of Indian Archaeology	Medium	° Minor constraint ° Mitigatible
	° Socio-Economic Impacts	Institute of Environmental Research Inc.	Community Character - Compatible Population - On Site and Site Vicinity - Rank 2 Community and Recreation Features - Rank 3 Access Route - Rank 2	° Relatively minor constraints
	° Transportation and Utilities	M.M. Dillon Ltd.	Site - Moderate Site Vicinity - Moderate	° Mitigatible effects

TABLE 14.3
Summary of Overall Ranking of Factors - Level 3

Level 3	Area of Responsibility	Consultant	Consultants' Ranking/Level	Major Reasons for Ranking/Comments
	° Natural Environment	Gartner Lee Associates Ltd.	Moderate Site Constraints Major Access Route Constraints	° Moderate constraint to siting ° Insufficient information for site rejection ° Site/site vicinity factors considered more important than access road factors
	° Air Dispersion/Air Quality - Dispersion, Air Quality and Local Receptors	Ontario Research Foundation	Moderate Constraint	° Moderate constraint to siting ° Potentially mitigatible ° Insufficient information to warrant site rejection
	° Air Dispersion/Air Quality - Sensitive Crops and Livestock	Ecologistics Ltd.	Moderate	° Moderate constraint ° Insufficient information to warrant site rejection
	° Air Dispersion/Air Quality - Regional Population within 5 km	Institute of Environmental Research Inc.	Population Range 3	° Moderate constraint ° Insufficient
	° Agricultural Resources	Ecologistics Ltd.	Site - Moderately Low Site Vicinity - Moderately Low Local Access Roads - Moderate Regional Access Roads - Moderate	° Moderate constraint ° Site and site vicinity factors considered more important than access road factors

TABLE 14.3 (Cont'd)

Summary of Overall Ranking of Factors - Level 3

Level 3	Area of Responsibility	Consultant	Consultants' Ranking/Level	Major Reasons for Ranking/Comments
	° Archaeological Resources	Museum of Indian Archaeology	High	° Potentially mitigatible
	° Socio-Economic Impacts	Institute of Environmental Research Inc.	Community Character - Compatible Population - On Site and Site Vicinity - Rank 3 Access Route - Rank 3 - Moderate Constraint	° Moderate constraint ° Variability in suitability ° Potentially suitable
	° Land Use/Land Ownership	Marshall Macklin Monaghan Ltd./ Leon Kentridge Associates Ltd.		° Moderate constraint
	° Transportation and Utilities	M.M.Dillon Ltd.	Site - High Site Vicinity - High Regional Access - Moderate	° Potentially mitigatible

TABLE 14.4

Summary of Overall Ranking of Factors - Level 4

Level 4	Area of Responsibility	Consultant	Consultants' Ranking/Level	Major Reasons for Ranking/Comments
	° Physical Resources	Gartner Lee Associates Ltd.	Level 3	° Potential soil depth constraint ° Potentially acceptable
	° Surface Drainage	Gartner Lee Associates Ltd./ M.M. Dillon Ltd.	Level 3	° Potentially acceptable
	° Natural Environment	Gartner Lee Associates Ltd.	Major Constraint	° Major potential constraint ° Potentially acceptable
	° Air Dispersion/Air Quality - Sensitive Crops and Livestock	Ecologistics Ltd.	High	° Relatively major potential constraint to siting ° Potentially acceptable
	° Air Dispersion/Air Quality - Regional Population within 5 km	Institute of Environmental Research Inc.	Population Range 4	° Relatively major potential constraint to siting
	° Agricultural Resources	Ecologistics Ltd.	High and Very High	° Major agricultural conflict

TABLE 14.4 (Cont'd)

Summary of Overall Ranking of Factors - Level 4

Level 4	Area of Responsibility	Consultant	Consultants' Ranking/Level	Major Reasons for Ranking/Comments
	° Archaeological Resources	Museum of Indian Archaeology	Severe	° Major potential constraint
	° Socio-economic Impacts	Institute of Environmental Research Inc.	Community Character - Incompatible Population - On Site and Site Vicinity - Rank 4 Access Route - Rank 4 and 5 Community and Recreation Features - Rank 5	° Major social/land use conflict
	° Land Use/Land Ownership	Marshall Macklin Monaghan Ltd./ Leon Kentridge Associates Ltd.	High Constraint	° Major land use conflict
	° Transportation and Utilities	M.M.Dillon Ltd.	Regional Access - High	° Major constraint

TABLE 14.5

Summary of Overall Ranking of Factors - Level 5

Level 5	Area of Responsibility	Consultant	Consultants' Ranking/Level	Major Reasons for Ranking/Comments
	° Physical Resources	Gartner Lee Associates Ltd.	Major Constraint	° Fails to provide second level of protection
	° Air Dispersion/Air Quality - Air Dispersion, Air Quality and Local Receptors	Ontario Research Foundation	Major Constraint	° Relatively severe potential risk
	° Air Dispersion/Air Quality - Sensitive Crops and Livestock	Ecologistics Ltd.	Very high	° Relatively severe constraint to siting
	° Air Dispersion/Air Quality - Regional Population within 5 km	Institute of Environmental Research Inc.	Population Range 5	° Relatively severe risk to siting
	° Socio-Economic Impacts	Institute of Environmental Research Inc.	Population on Site and in Site Vicinity - Rank 5	° Relatively severe potential risk or impact
	° Transportation	M.M. Dillon Ltd.	Site Vicinity - very high	° Severe airport conflict due to stack height and safety constraint

15.0 COMPARISON OF ACCESS ROUTE OPTIONS

15.1 RANKING OF FACTORS

Before it was possible to compare the siting options it was first necessary to define precisely the major components of each option. This meant a preliminary identification of preferred access routes from the 400 series highways to the site.

The factors which were used by the site selection team to compare the alternative access route options were the same as the local and regional access route factors listed in Table 12.1. The comparison of access route options (as with the comparison of siting options - See Chapter 16) necessitated a ranking of factors. The major reasons for the ranking of factors as developed by the site selection team included the following:

- it was recognized that the major day-to-day concern associated with access routes would be the potential disturbance to the use and enjoyment of property and public and private facilities as a result of truck noise, exhaust fumes and potential interference with property access and local traffic movements. A particular priority was, therefore, attached to minimizing the distance through residential areas and areas with large numbers of community facilities. It was also recognized that, in the remote event of an accidental release human exposure could represent a potential concern. Emphasis was, therefore, placed upon access route selection that would minimize population exposure. Particular consideration was given to residential uses and community and recreation facilities abutting the access routes;

- it was recognized that the longer the haulage distance, particularly along local roads with higher accident rates, the greater the potential for an accidental release of contaminants. At the same time it was recognized that the differences in haulage distances to the same site along different access routes would generally be quite limited. Thus differences in accident rates tended only to be used as a major consideration in comparing access route options when there were substantial differences in haulage distances;

- agriculture was not generally considered as important in terms of risk to human health as residential uses and community facilities abutting the access routes. The exposure of a relatively small amount of cropland or livestock (in the event of an accidental release) was considered to be an impact which could generally be mitigated, e.g. exposed crop area removed. Agriculture was, however, an important concern in terms of potential interference with farm vehicle movements and potential effects on farm operations. The agriculture considerations which were employed in the ranking of access routes included farm building complexes, land capability and sensitive crops and livestock;

- potential biological impacts, as represented by the number and significance of stream crossings, were considered a somewhat less important route comparison consideration. The importance attached to stream crossings was based on the recognition that the accidental release of contaminants into a stream course could represent a serious concern. At the same time it was recognized that the likelihood of an accidental spill in transit was very remote and the likelihood that such a spill would involve a direct release into a major watercourse was even more remote;

- hydrogeologic impacts as represented by distance through hydrogeologically sensitive lands was considered a relatively minor risk-related consideration in factor ranking for access road options. The treatment of hydrogeologic sensitive lands in this manner was based on the recognition that the remedial clean-up actions which would be taken within hours of an accidental spill would generally be sufficient to contain and clean up any contaminants, irrespective of hydrogeologic setting. It was, therefore, concluded that the differences among access route options would relate more to the ease of clean-up rather than to major differences in potential risk to the environment;

On the basis of the considerations cited above, the factors which were used in the ranking of access route options tended to be ranked as factors (from most to least important), as follows:

- Social and Land Use Factors;
- Transportation Safety and Agricultural Factors:
- Stream Crossings
- Hydrogeologic Factors.

15.2 RANKING OF ACCESS ROUTE OPTIONS

The process of comparing access route options began with the relative differences among the access route options in terms of the access route factors. These differences are highlighted in a series of matrices in Appendix J.

Each site selection consultant used the differences among the access routes as a basis for ranking or rating the access route options. In the case of the social, land use, transportation, agricultural and hydrogeologic consultants, the access route alternatives were ranked in order of preference from most to least suitable. In the case of the biological factors, the access route options were rated in terms of no, minor, moderate and major constraints. Where there were no differences or relatively minor differences between or among access route options, the options were placed at the same level.

These ratings and rankings are summarized in a series of tables contained in this section. The summary tables, together with the detailed matrices, were then used by the site selection team to reach conclusions regarding the preferred access routes. The following approach was taken in identifying preferred access routes: a) inspecting the summary tables (recognizing the factor rankings); b) cross-checking the summary tables against the detailed matrices; c) reaching a conclusion regarding the preferred access route or routes; d) documenting the rationale for the conclusion using route-specific data. This approach was taken for the following reasons:

- relying solely on the rankings and ratings would have separated the evaluation process from the direct consideration of the specific individual constraints and opportunities located along each access route;

- the access route option rankings and ratings do not reflect precisely the magnitude of differences among options. Thus a transportation safety ranking of 4 might, for example, reflect a much more severe potential constraint than a ranking of 3. Conversely a transportation safety ranking of 2 might be only slightly better than a transportation safety ranking of 3. These magnitude of difference considerations are not evident in the summary tables;

- With many of the access route comparisons there are a small number of route-specific tradeoffs. Thus, a basis for decision-making could be provided without the distortions and information losses which occur with just using the summary rankings. A reasoned argument using route-specific constraints was also felt to be easier to understand and would generally facilitate corporate, agency and public understanding and involvement.

- o the systematic approach to evaluation, as represented by the summary tables, is still retained as part of the evaluation process.

15.3 ACCESS ROUTE OPTIONS - APPLICATION OF FACTORS

a) Introduction

The format for comparing the access route options is as follows:

- o for each integrated and partially integrated option, access route options (where they exist) are briefly described. The options are also illustrated on a small map;
- o the relative differences among the options, in terms of the access route factors, are highlighted in a summary table and detailed in a matrix placed in Appendix J;
- o the analysis of these differences is presented in text form. The summary table is employed as a general guide and the detailed matrices are employed to explore route-specific constraints and opportunities.
- • preliminary conclusions are then specified regarding the preferred access route or routes. Greater emphasis is given in the analysis to those factors which were ranked higher.

b) Integrated Site Options LF-10W and LF-11W

As illustrated in Figure 15.1 no access route options were identified for LF-10W or LF-11W. In both cases the sites could be linked quite directly to a regional road (Regional Road 222) and, in turn, to a Provincial highway (Highway 2), and on to Highway 403. Although it was recognized that minor modifications to the local access routes might be necessary, it was concluded that such modifications could not be addressed without a more detailed site analysis. Local access modifications were also not expected to alter the relative suitability of LF-10W or LF-11W in comparison to the other siting options.

The preliminary access routes to LF-10W and LF-11W were determined to be:

to LF 10W

from 403 - west on Hwy. 2; south on Regional Road 222; west on Sawmill Road (local road) to LF-10W.

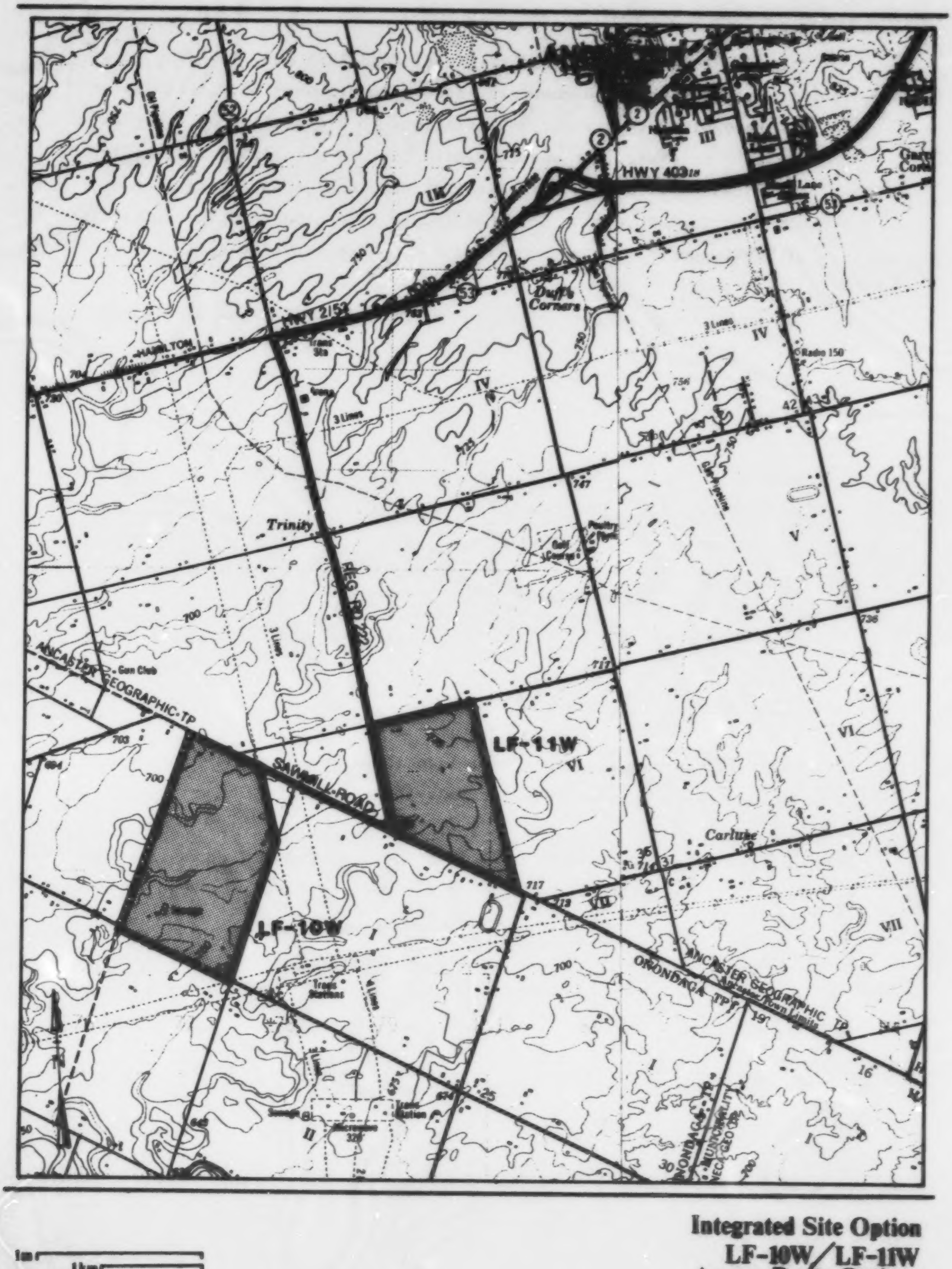
to LF 11W

from 403 - west on Hwy. 2; south on Regional Road 222 to LF-11W.

c) Integrated Site Option LF-4N

Eight access route options were identified for the fully integrated siting option LF-4N. These options include the following:

1. from 401 - south on Hwy. 25; west on Steeles Ave; south on First Line Road (local road); west on Britannia Road to LF-4N


HWY 403
HWY 2/53
REG RD 22
SAWMILL ROAD
ANCASTER GEOGRAPHIC TP
ORONDAGA TP
Trinity
Duffs Corners
Carluke
LF-11W
LF-10W
Gun Club
1m
1km

Integrated Site Option
LF-10W/LF-11W
Access Route Options
FIGURE 15.1

2. from 401 - south on Hwy. 25; west on Steeles Ave.; south on Tremaine Road to LF-4N

3. from 401 - south on Fourth Line Rd. (partially local road); west on Britannia Road to LF-4N

4. from 401 - south on Fourth Line Rd.; east on Derry Road; south on Fifth Line Road (local road); west on Britannia Road to LF-4N

5. from 401 - south on Trafalgar Rd.; west on Britannia Road to LF-4N

6. from 403 - north on Winston Churchill Blvd.; west on Britannia Road to LF-4N

7. from QEW - north on Trafalgar Road; west on Britannia Road to LF-4N

8. from QEW - north on Hwy. 25 (Bronte Road); west on Britannia Road to LF-4N

The eight options are illustrated in Figure 15.2. The major differences among the options are highlighted in Table 15.1 and detailed Table J.1 in Appendix J.

As illustrated in Figure 15.2 five of the options involve access from the north (from Highway 401) and three involve access from the south. As special wastes would be coming to the site from both the north and the south, it was recognized that access from both the north and south would be necessary. The five northern options and the three southern options were, therefore, compared separately.

The eight options did not include any potential or planned new highways in the vicinity of LF-4N, notably the proposed Dorval Way and the extension of Highway 403. These routes were not included because it was uncertain as to whether these roads would be open prior to the commencement of operations of the OWMC facility. Currently the Ontario Ministry of Transportation and Communications estimates suggest construction during the 1990s for Highway 403. The timing for the construction of Dorval Way is unknown. Rather than relying on access routes which may not be available when required and to avoid understating impacts on local roads, it was, therefore, decided to limit the comparison of access route options to existing roads. At the same time it was recognized that as the site selection proceeds, and when the timing of these new routes is finalized, further consideration will need to be given to minimizing potential impacts through the use of those facilities.

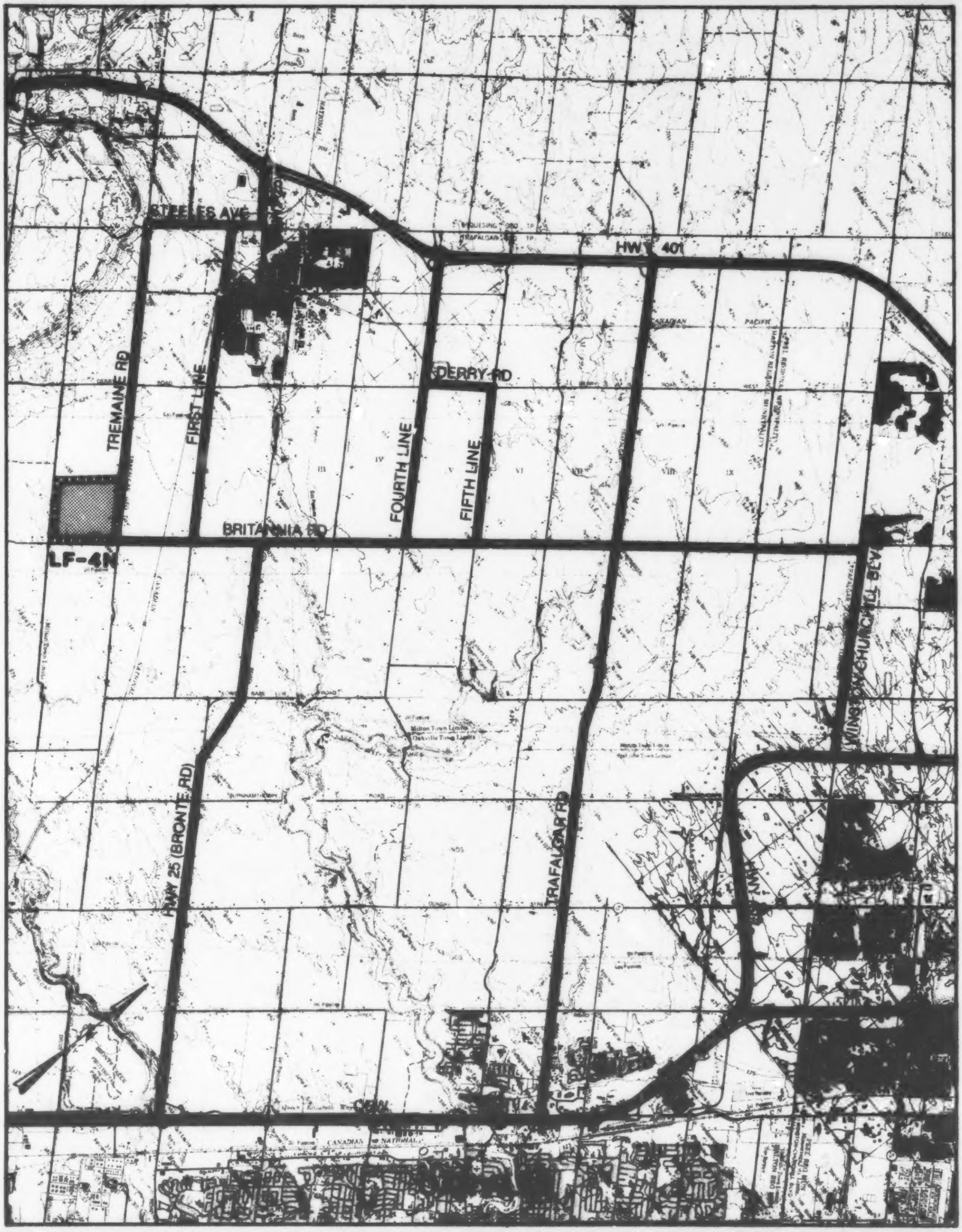
After comparing the three access route options from the south (see Table 15.1) it was concluded that Option 8 (Hwy. 25) was preferred over Option 6 (Winston Churchill Boulevard) and Option 7 (Trafalgar Road). The major reasons for this preference included the following:

- from a transportation safety perspective (transportation accident frequency) Option 6 (403 - north on Winston Churchill Boulevard) and Option 7 (QEW - north on Trafalgar Road) were considered much less desirable than the Hwy. 25 access (Option 8);

- Option 7 (Trafalgar Road) involves a greater distance through much more populated areas and passes many more community features than does Option 8. Option 8 was slightly favoured over Option 6 in terms of land use constraints;

- Options 6 and 7 also involve greater lengths through hydrogeologically sensitive lands than does Option 8;

- Access for Option 6 from the south and the east is inhibited by the fact that direct access to Highway 403 from the QEW from the


STEELES AVE
HWY 401
TREMAINE RD
FIRST LINE
DERRY RD
FOURTH LINE
FIFTH LINE
BRITANNIA RD
LF-4N
HWY 25 (BRONTE RD)
TRAFALGAR RD
WINSTON CHURCHILL BLV
1m
1km

Integrated Site Option
LF-4N
Access Route Options
FIGURE 15. 2

TABLE 15.1

Summary Rankings - Access Route Options

LF-4N Integrated[1]

SUMMARY OPTIONS FACTORS	1	2	3	4	5	6	7	8
SOCIAL	3	3	1	2	3	1	2	1
LAND USE	7	6	1	2	3	5	8	4
TRANSPORTATION	3	2	4	5	6	7	8	1
AGRICULTURE	1	1	2	2	3	3	3	3
STREAM CROSSINGS	major	moderate	major	major	major	major	major	major
HYDROGEOLOGY	2	1	4	3	7	5	6	4

[1] The access route options are ranked from the most (1) to the least (8) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constaints.

east is not possible. Truck access to Winston Churchill Boulevard from the west would therefore involve movement, through the built-up area of Mississauga/Oakville on Winston Churchill Boulevard between the QEW and Highway 403.

After comparing the five access route options from the north, the site selection team concluded that Option 3 (Fourth Line - Britannia Road) was preferred over the other four access route options. The major reasons for this preference included the following:

- Options 1 and 2 (Hwy. 25) were considered relatively less desirable than Option 3 because they involved access through built-up portions of Milton;

- Option 5 (Trafalgar Road) was considered relatively less desirable than Option 3 as it: had a much higher transportation accident frequency, resulted in greater potential agricultural impacts, had a greater distance through hydrogeologically sensitive lands and it passed more community and recreation features;

- Option 4 (Fourth Line - Derry Road) was considered less desirable by the site selection team than Option 3 because of a higher transportation accident frequency, a longer distance through strip residential areas and a higher estimated population along the access routes.

d) Integrated Site Option LF-3C

Nine access route options were identified for the fully integrated siting option LF-3C. These options included the following:

LF-3C

1. from QEW - south on Vineland Townline road (Regional Road 24); west on Hwy. 20; south on Regional Road 27; west on Elcho Road (local road) to LF-3C

2. from QEW - south on Vineland Townline Road (Regional Road 24); west on Canborough Road (Regional Road 63); north on Regional Road 27; west on Elcho Road (local road) to LF-3C

3. from QEW - south on Regional Road 18 (Beamsville Road); west on Regional Road 69 (Twenty Mile Road); south on Regional Road 569; south on Hwy. 20; south on Regional Road 27; west on Elcho Road (local road) to LF-3C

4. from QEW - south on Regional Road 14; south on Regional Road 714; east on Regional Road 73; south on Regional Road 14; east on Hwy. 20; south on Regional Road 27; west on Elcho Road (local road) to LF-3C

5. from QEW - south on Regional 14; south on Regional Road 714; east on Regional Road 73; south on Regional Road 14; south on Regional Road 16 to LF-3C

6. from QEW - south on Regional Road 12; east on Hwy. 20; south on Regional Road 27; west on Elcho Road (local road) to LF-3C

7. from QEW - south on Regional Road 12; east on Hwy. 20; south on Regional Road 14; south on Regional Road 16 to LF-3C

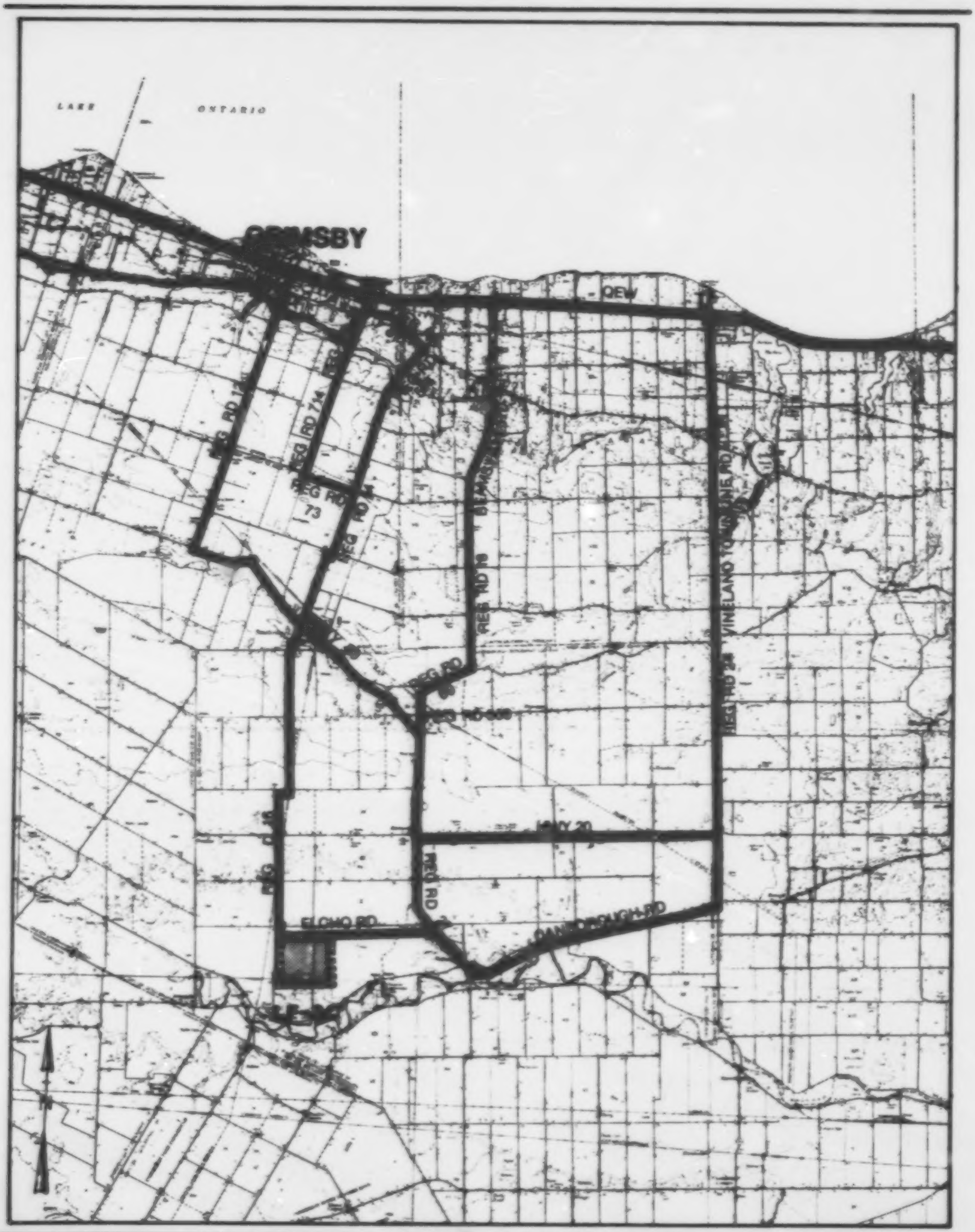
8. from QEW - south on Regional Road 14; east on Regional Road 81; south on Regional Road 514; south on Regional Road 14; south on Regional Road 16 to LF-3C

9. from QEW - south on Regional Road 14; east on Regional Road 81; south on Regional Road 514; south on Regional Road 14; east on Hwy. 20; south on Regional Road 27; west on Elcho (local road) to LF-3C

The nine options are illustrated on Figure 15.3. The major differences among the options are highlighted in Table 15.2 and detailed in Table J.2 in Appendix J.

As illustrated on Figure 15.3 four of the access options involve access from the QEW using Regional Road 14, two employ Regional Road 24, one uses Regional Road 18 and two use Regional Road 12. After comparing these options, the site selection team concluded that Option 1 was the preferred option. The major reasons for this conclusion included the following:

o Options 4, 5, 6, 7, 8, and 9 (Regional Roads 12 and 14) all involve access through portions of the built-up areas of Grimsby and Smithville. Option 1 (Regional Road 24) involves access through less populated areas and passes fewer community and recreation features. The seven options are approximately equal with respect to the livestock population and stream crossings. Option 1 is somewhat less favoured in terms of the transportation accident frequency, agriculture and crossings of hydrogeologically sensitive lands. However, the site selection team concluded that the advantages associated with Options 4



LAKE ONTARIO
GRIMSBY
QEW
REG RD 12
REG RD 714
REG RD 73
REG RD 14
REG RD
HWY 20
REG RD 24
VINELAND
HWY 20
REG RD
ELCHO RD

Integrated Site Option
LF-3C
Access Route Options
FIGURE 15.3

TABLE 15.2[1]

Summary Rankings - Access Route Options

LF-3C Integrated

SUMMARY FACTORS / OPTIONS	1	2	3	4	5	6	7	8	9
SOCIAL	1	2	3	4	5	8	9	7	6
LAND USE	1	3	2	6	5	7	4	9	8
TRANSPORTATION	8	9	5	6	7	1	2	4	3
AGRICULTURE	3	3	3	2	1	3	2	3	3
STREAM CROSSINGS	major	major	moderate	moderate	moderate	moderate	moderate	moderate	moderate
HYDROGEOLOGY	8	9	1	5	4	3	2	6	7

---

[1] The access route options are ranked from the most (1) to the least (9) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

through 9 did not offset the potential impacts associated with access through built-up areas;

- The major difference between Options 1 (Hwy. 20) and 2 (Canborough Road) is the somewhat greater transportation accident frequency associated with Option 2. Option 2 also involves travel through an additional community - Wellandport. Option 2 is somewhat less desirable than Option 1 in terms of sensitive crops and Option 2 involves somewhat greater distances through sensitive hydrogeologic lands. The site selection team concluded that the transportation safety and distance through populated areas advantages associated with Option 1 were sufficient to warrant a preference for Option 1 over Option 2;

- Options 1 (Regional Road 24) and 3 (Regional Road 18) were considered to be very close. Option 3 was favoured in terms of the transportation accident frequency and stream crossing ratings. Option 1 is favoured in terms of access through populated areas (Option 3 goes through Beamsville) and distance through strip residential development. It was also recognized that the condition of the access roads (road conditions, turning movements, sight lines) were more favourable for Option 1. The populated area concern, together with the road condition concerns (not all of which were completely mitigatible) were felt to give a slight preference to Option 1. It was also, however, concluded that it would be prudent to give some further consideration to Option 3 in Phase 4A.

- On the basis of the preceding analysis the site selection team, therefore, concluded that Option 1 was the preferred access route to LF-3C. It was also concluded that Option 3 should receive some additional consideration in Phase 4A. As Option 5 was the preferred route in terms of minimizing potential agricultural impacts, the site selection team concluded that the option should receive more detailed consideration in Phase 4A. In addition it was recognized that the comparative analysis of routing options to LF-3C represented an overview of largely regional differences. The site selection team, therefore, concluded that further consideration should be given to local access routes (including new local access routes) to the site in Phase 4A. The analysis undertaken to this point was considered to be sufficient for the purposes of comparing potential sites.

e) Integrated Site Option - LF-8C

Six access route options were identified for the fully integrated siting option LF-8C. These options included the following:

1. from QEW - south on Vineland Townline Road (Regional 24); west on Hwy. 20; south on Gee Road (local road) to LF-8C

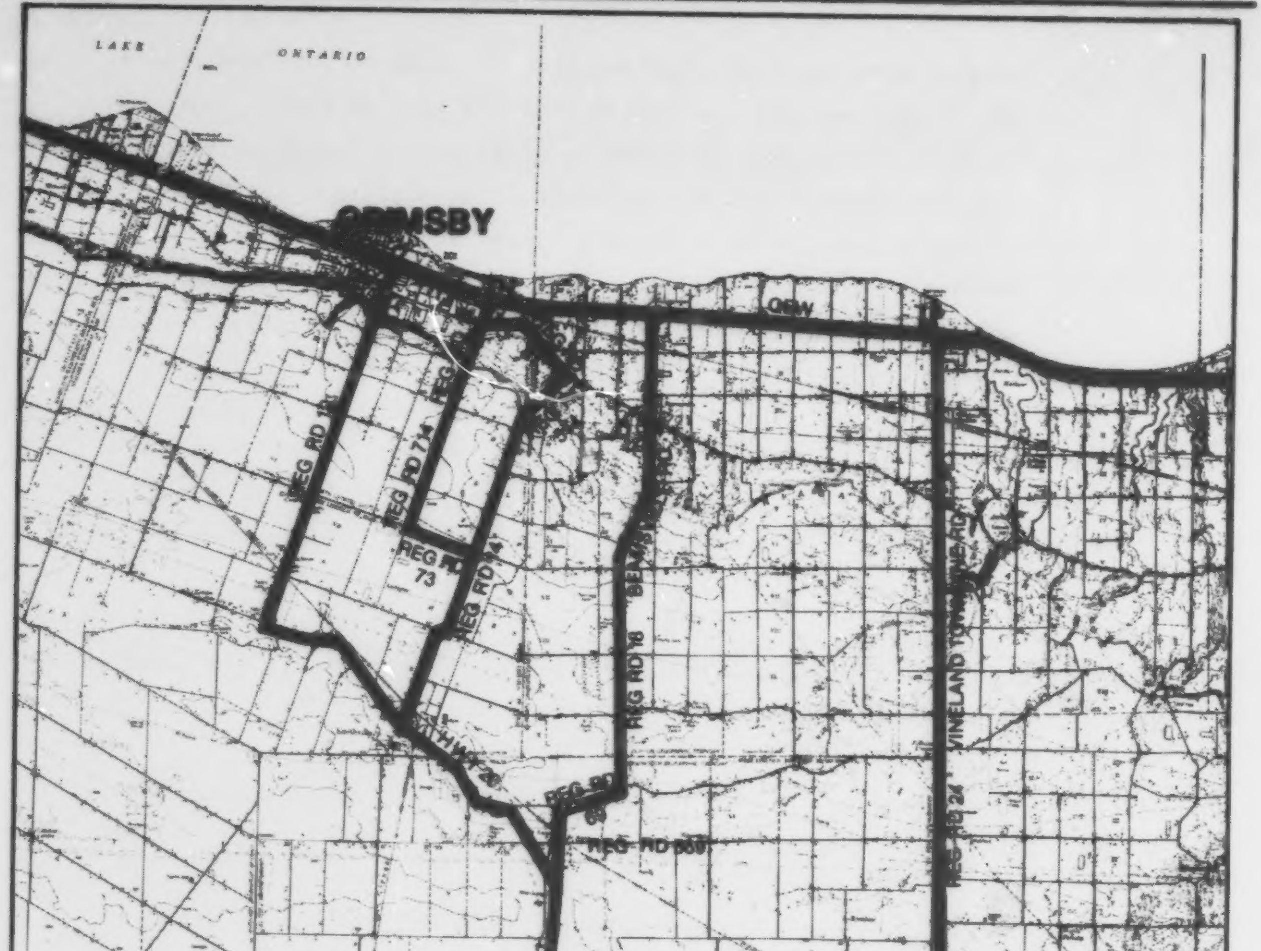
2. from QEW - south on Vineland Townline Road (Regional Road 24); west on Canborough Road; north on Gee Road (local road) to LF-8C

3. from QEW - south on Regional Road 18; west on Regional Road 69; south on Regional Road 569; south on Hwy. 20; south on Gee Road (local road) to LF-8C

4. from QEW - south on Regional Road 14; south on Regional Road 714; east on Regional Road 73; south on Regional Road 14; east on Hwy. 20; south on Gee Road (local road) to LF-8C

5. from QEW - south on Regional Road 12; east on Hwy. 20; south on Gee Road (local road) to LF-8C

6. from QEW - south on Regional Road 14; east on Regional Road 81; south on Regional Road 514; south on Regional Road 14; east on Hwy. 20; south on Gee Road (local road) to LF-8C.


LAKE ONTARIO
GRIMSBY
QEW
REG RD 12
REG RD 74
REG RD 73
REG RD 14
HWY 20
REG RD 18
BEAMSVILLE RD
REG RD 65
REG RD 569
HWY 20
VINELAND TOWNLINE RD
REG RD 24
LF-8C
CANBOROUGH RD
N
1mi
1km

Integrated Site Option
LF-8C
Access Route Options
FIGURE 15.4

TABLE 15.3

Summary Rankings - Access Route Options

LF-8C Integrated[1]

SUMMARY OPTIONS FACTORS	1	2	3	4	5	6
SOCIAL	1	2	3	4	6	5
LAND USE	1	2	3	4	5	6
TRANSPORTATION	4	5	3	3	1	2
AGRICULTURE	2	3	3	1	3	3
STREAM CROSSINGS	major	major	moderate	moderate	moderate	moderate
HYDROGEOLOGY	5	5	1	3	2	4

[1] The access route options are ranked from the most (1) to the least (8) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

The six options are illustrated on Figure 15.4. The major differences among the options are highlighted in Table 15.3 and detailed in Table J.3 in Appendix J. As illustrated on Figure 15.4, although the access roads in close proximity to the sites vary, the regional access routes to LF-8C involve the same north-south connections to LF-8C as LF-3C.

After comparing the six options the site selection team concluded that Option 1 (Regional Road 24) was preferred. The major reasons for this preference included the following:

- As with site LF-3C, access through Grimsby and Smithville was considered a major relative disadvantage with Options 4, 5 and 6 (Regional Roads 12 and 14). This disadvantage was felt to more than offset the moderate agricultural advantages (Option 4), transportation accident frequency differences (these differences were felt to be relatively moderate) and the lesser length through hydrogeologically sensitive lands associated with Options 4, 5 and 6. Option 1 also passes fewer community and recreation features and active farm complexes than the other three options;

- Option 1 (Regional Road 24) was preferred over Option 3 (Regional Road 18) in terms of population centres (Option 3 involves access through Beamsville), distance through strip residential development and agriculture. Option 3 was favoured over Option 1 in terms of transportation accident frequency (a very moderate difference) and distance through hydrogeologically sensitive lands. The disadvantages associated with Option 3, however, were considered such that Option 1 was preferred.

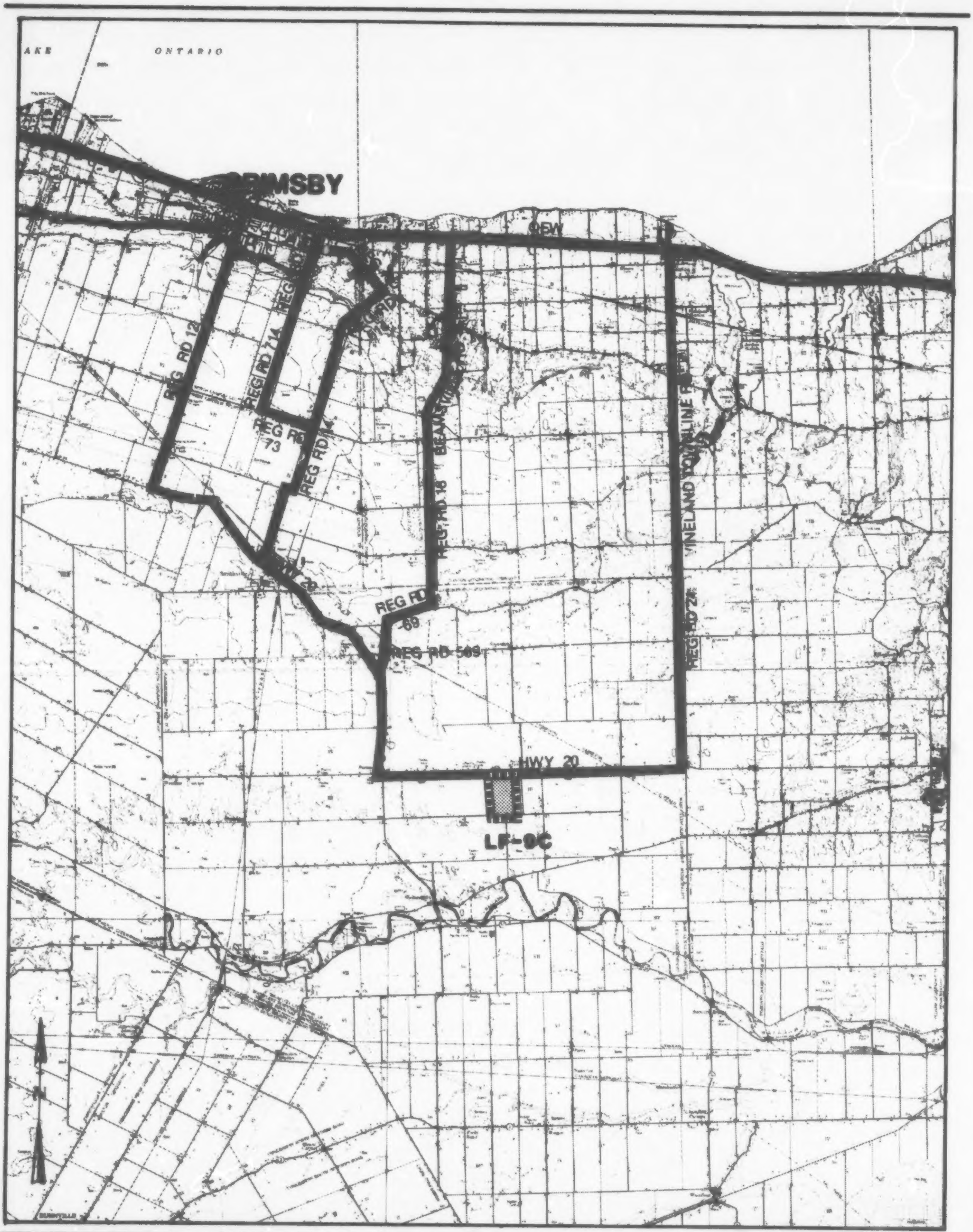
- There were very few differences identified between Options 1 (Hwy. 20) and 2 (Canborough Road). However, the higher estimated population along Option 2 and the slightly higher agricultural rating for Option 2, resulted in a slight preference for Option 1.

On the basis of the above the site selection team considered Option 1 to be the preferred access road to LF-8C. However, (as with LF-3C) it was considered desirable to review Option 2 and Option 4 (the preferred option in terms of potential agricultural impacts) in Phase 4A as well as the local access roads. The analysis undertaken to this point was however, considered sufficient to proceed with the initial comparative evaluation of siting options.

f) Integrated Site Option - LF-9C

Five access route options were identified for the fully integrated siting option - LF-9C. These options included the following:

1. from QEW - south on Vineland Twp. Road (Regional Road 24); west on Hwy. 20 to LF-9C
2. from QEW - south on Regional Road 18; west on Regional Road 69; south on Regional Road 569; south on Hwy. 20; east on Hwy 20 to LF-9C
3. from QEW - south on Regional Road 14; south on Regional Road 714; east on Regional Road 73; south on Regional Road 14; east on Hwy. 20 to LF-9C
4. from QEW - south on Regional Road 12; east on Hwy. 20 to LF-9C
5. from QEW - south on Regional Road 14; east on Regional Road 81; south on Regional Road 514; south on Regional Road 14; east on Hwy. 20 to LF-9C.


AKE ONTARIO
GRIMSBY
QEW
REG RD 12
REG RD 74
REG RD 73
REG RD 14
BEAMSVILLE
REG RD 18
VINELAND TOWNLINE RD
REG RD 24
HWY 20
REG RD 69
REG RD 569
LF-9C

Integrated Site Option

LF-9C
Access Route Options
FIGURE 15.5

TABLE 15.4

Summary Rankings - Access Route Options

LF-9C Integrated[1]

SUMMARY OPTIONS FACTORS	1	2	3	4	5
SOCIAL	1	2	3	4	4
LAND USE	1	2	3	4	5
TRANSPORTATION	4	3	3	1	2
AGRICULTURE	1	3	1	2	3
STREAM CROSSINGS	major	moderate	moderate	moderate	moderate
HYDROGEOLOGY	5	1	3	2	4

[1] The access route options are ranked from the most (1) to the least (5) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

The five options are illustrated on Figure 15.5. The major differences among the options are highlighted in Table 15.4 and detailed in Table J.4 in Appendix J. As illustrated on Figure 15.5, the access routes to LF-9C are essentially the same as those for LF-8C (except for local access roads and one less regional access road).

After comparing the five options the site selection team concluded that Option 1 was preferred. The major reasons for this preference included the following:

- Options 3, 4 and 5 (Regional Roads 12 and 14) involved access through Grimsby and Smithville. Two of the three options (Options 4 and 5) were considered relatively less desirable in terms of agricultural considerations, although it was recognized that they had somewhat lower transportation accident frequencies. On balance, it was concluded that Option 1 (Regional Road 24) was preferable to Options 3, 4, and 5 because of the differences among the sites in terms of distance through populated areas and potential agricultural impacts (in the case of Options 4 and 5).

- Option 1 was favoured over Option 2 (Regional Road 18) because Option 2 involves access through Beamsville. Option 2 also has greater potential agricultural impacts. The shorter distance through hydrogeologically sensitive lands, the lower stream crossing rating and the moderately lower transportation accident frequency for Option 2 was not considered sufficient to reverse the preference for Option 1.

On the basis of the reasons cited above the site selection team therefore selected Option 1 as the preferred access route. In view of the relatively limited differences between Options 1 and 2, it was, however, decided to consider Option 2 further in Phase 4A. It was also decided to give more detailed consideration to local access options in the vicinity of LF-9C. The analysis undertaken to this point was considered sufficient to proceed with the initial comparative evaluation of siting options.

g) Integrated Site Option - LF-1E

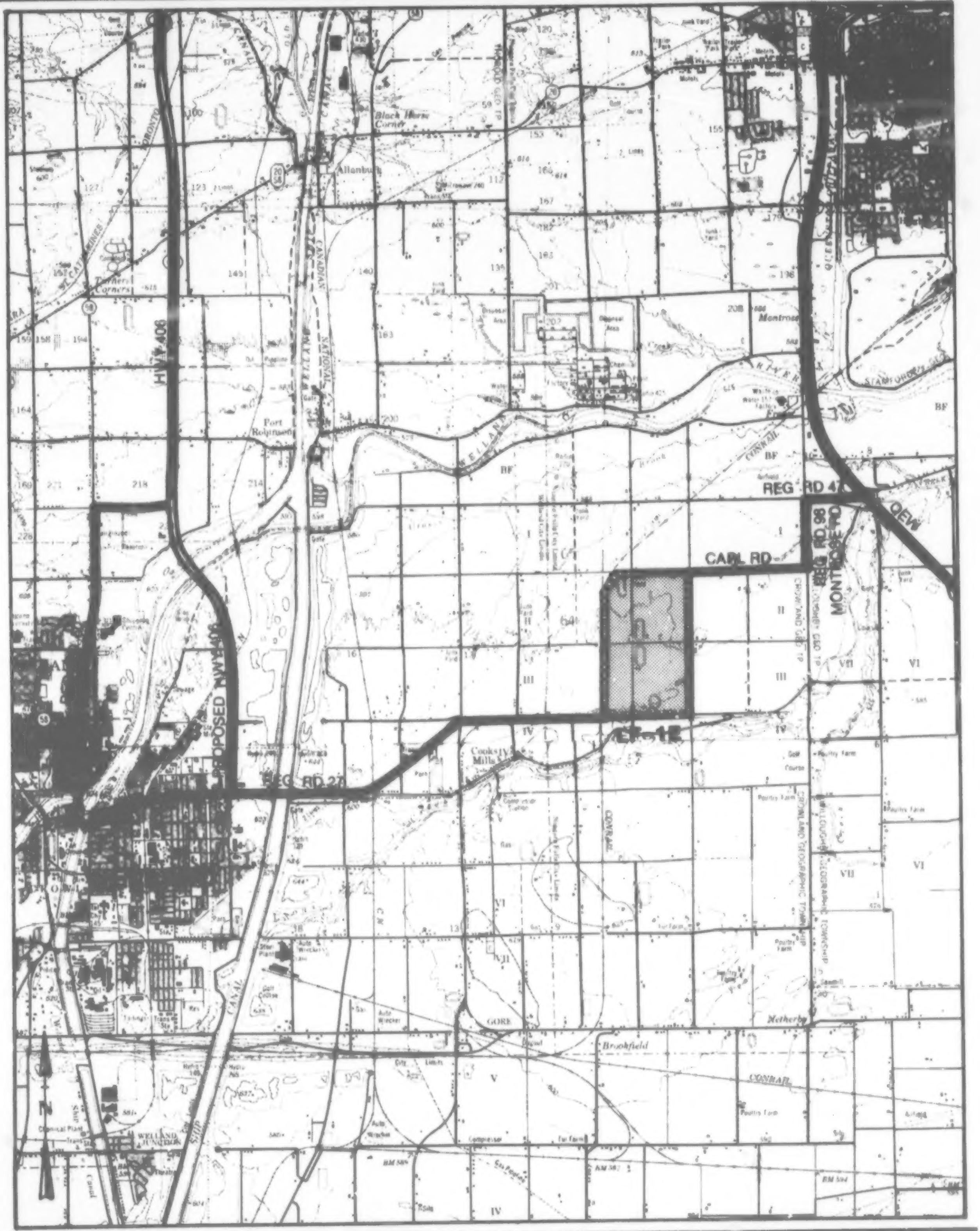
Three access route options were identified for the fully integrated siting option - LF-1E. These options included the following:

1. from 406 (existing) - south on Hwy. 58 (Regional Road 50); east on Division St. (Regional Road 527); north on Burgar St. (Regional Road 527); east on Regional Road 27 to LF-1E
2. from QEW (existing) - west on Regional Road 47 (Lyon Creek Road); south on Regional Road 98 (Montrose Road); west on Carl Road to LF-1E
3. from 406 (proposed) - east on Regional Road 27 to LF-1E

The three options are illustrated on Figure 15.6. The major differences among the options are highlighted in Table 15.5 and detailed in Table J.5 in Appendix J. After comparing the three options the site selection team concluded that Option 2 was preferred. The major reasons for this preference included the following:

Option 1 (existing Hwy. 406) is substantially less desirable than Option 2 (Regional Road 47) in terms of transportation accident frequency, distance through residential development, access through populated areas, potential agricultural impacts, community and recreation features, sensitive hydrogeologic lands crossed and stream crossings.

As it was recognized that the Highway 406 extension is expected to be completed prior to the opening of the facility (the 406 extension is currently slated for completion of construction by 1988) the possibility of using this route was considered in Option 3. Although Option 3 did


HWY 406
PROPOSED HWY 406
REG RD 27
REG RD 47
CARL RD
REG RD 98
MONTROSE RD
QEW
LF-1E
WELLAND RIVER
CONRAIL
CANADIAN NATIONAL
Port Robinson
Allanburg
Black Horse Corner
Montrose
Cooks Mills
GORE
Brookfield
Netherby
WELLAND JUNCTION
CROWLAND GEOGRAPHIC TOWNSHIP
WILLOUGHBY GEOGRAPHIC TOWNSHIP
1mi
1km

Integrated Site Option
LF–1E
Access Route Options
FIGURE 15.6

TABLE 15.5

Summary Rankings - Access Route Options

LF-1E Integrated[1]

SUMMARY FACTORS / OPTIONS	1	2	3
SOCIAL	3	1	2
LAND USE	3	1	2
TRANSPORTATION	3	1	2
AGRICULTURE	3	1	2
STREAM CROSSINGS	major	no	no
HYDROGEOLOGY	3	1	2

[1] The access route options are ranked from the most (1) to the least (3) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

reduce the distance through residential strip development and the transportation accident frequency, Option 3 remained less desirable than Option 2 for almost all factors.

Although the preference for Option 2 for access to LF-1E was considered clear, there did remain a number of choices with respect to the local access routes. A preliminary selection of a local access route was made - Carl Road. Firmer conclusions regarding the choice of local access routes to LF-1E would not, however, be possible without more detailed knowledge of site, site vicinity and local access route considerations. As this information was not necessary for siting option comparison purposes it was decided to defer consideration of such routes until Phase 4A.

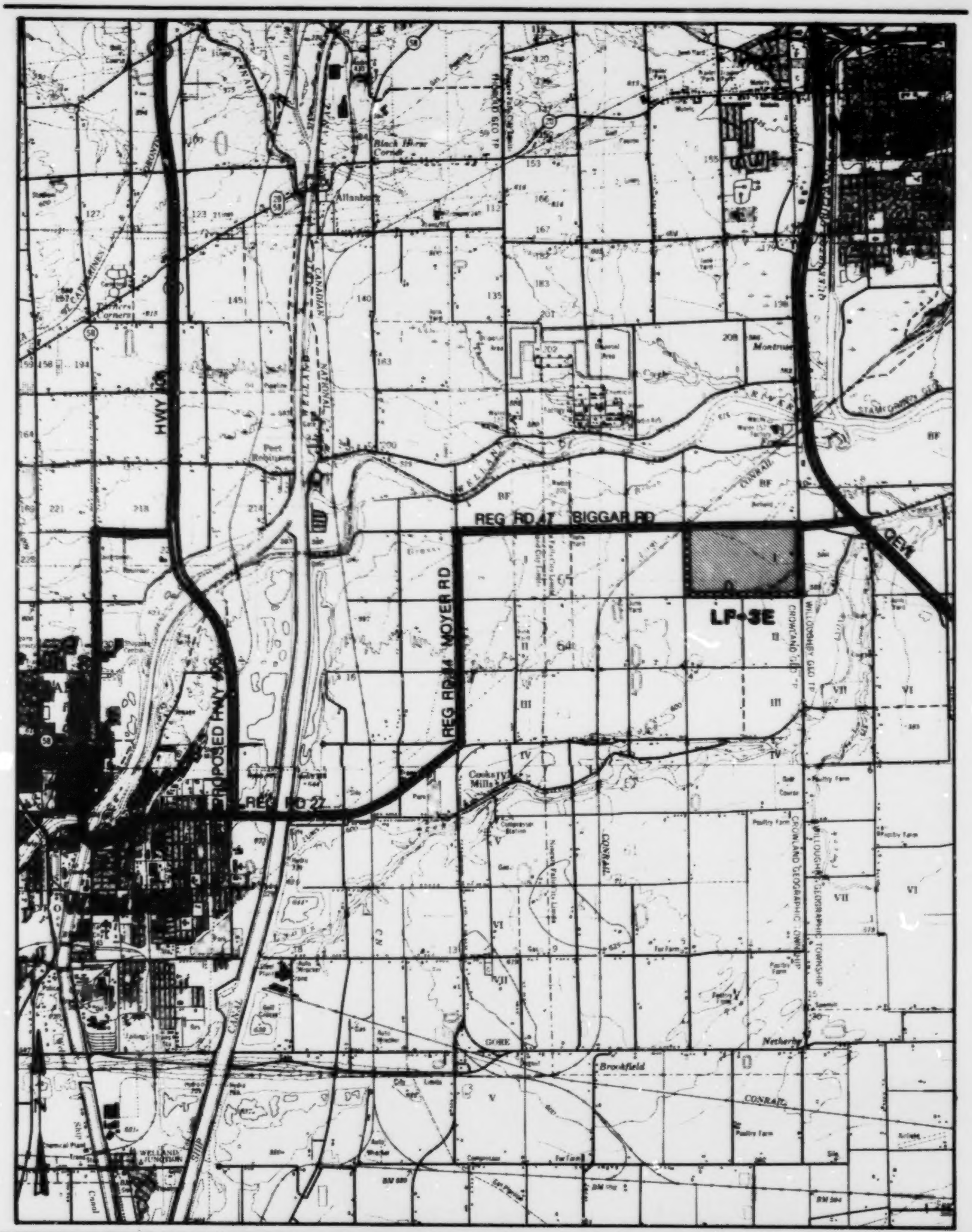
h) Integrated Site Option - LF-3E

Three access route options were identified for the fully integrated siting option - LF-3E. These options included the following:

1. from 406 (existing) - south on Hwy. 58 (Regional Road 50); east on Division St. (Regional Road 527); north on Burgar St. (Regional Road 527); east on Regional Road 27; north on Regional Road 84 (Moyer Road); east on Regional Road 47 (Biggar Road) to LF-3E

2. from QEW - west on Regional Road 47 (Lyons Creek Road/Biggar Road) to LF-3E

3. from 406 (proposed) - east on Regional Road 27; north on Regional Road 84 (Moyer Road); east on Biggar Road (Regional Road 47) to LF-3E


HWY 406
REG RD 47 BIGGAR RD
QEW
LF-3E
REG RD 84 MOYER RD
PROPOSED HWY 406
REG RD 27
CROWLAND GEO TP
WILLOUGHBY GEO TP
CROWLAND GEOGRAPHIC TOWNSHIP
WILLOUGHBY GEOGRAPHIC TOWNSHIP
Allanburg
Black Horse Corner
Port Robinson
Cooks Mills
Montrose
Brookfield
Netherby
GORE
WELLAND JUNCTION
CONRAIL
CANADIAN NATIONAL
WELLAND RIVER
Ship Canal
1m
1km

Integrated Site Option
LF-3E
Access Route Options
FIGURE 15.7

TABLE 15.6

Summary Rankings - Access Route Options

LF-3E Integrated[1]

SUMMARY FACTORS / OPTIONS	1	2	3
SOCIAL	3	1	2
LAND USE	3	1	2
TRANSPORTATION	3	1	2
AGRICULTURE	3	1	2
STREAM CROSSINGS	major	no	moderate
HYDROGEOLOGY	2	1	2

---

[1] The access route options are ranked from the most (1) to the least (3) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

The three options are illustrated on Figure 15.7. The major differences among the options are highlighted on Table 15.6 and detailed on Table J.6 in Appendix J. After comparing the three options the site selection team concluded that Option 2 (Regional Road 47) was preferred. The major reasons for this preference included the following:

- As with LF-1E, Option 1 (existing Hwy. 406) is substantially less desirable than Option 2 for all the major factors;
- Also (as with LF-1E) the consideration of the Hwy. 406 (proposed) access route (Option 3) failed to alter the preference for Option 2.

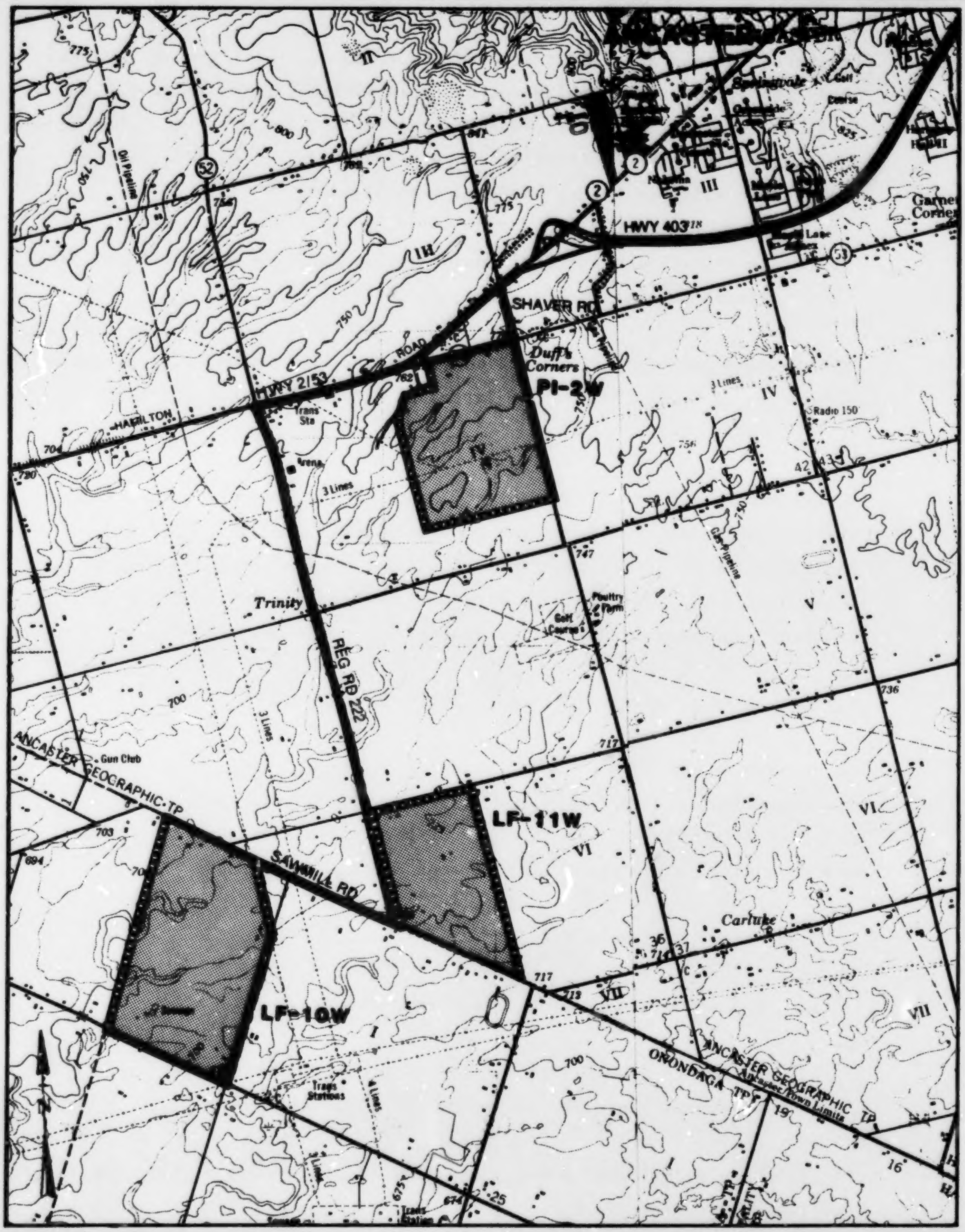
A preliminary selection of local access routes was made for the preferred option. The site selection team, however, concluded that more detailed consideration of local access routes should be undertaken in Phase 4A. These additional analyses were not, however, considered necessary to complete the initial comparative evaluation of siting options.

(i) Partially Integrated Options - Introduction

The comparison of partially integrated access route options was somewhat more complex than the comparison of access route options for fully integrated facilities. In the case of partially integrated facilities it was necessary to evaluate three sets of options as follows:

- access to the PI site;
- access to the LF site from the PI site;
- access to the LF site (in the event that a physical/chemical treatment plant is located at the landfill).

The relative differences among these sets of options are highlighted in the following subsections.



PI-2W
LF-11W
LF-10W
HWY 2/53
HWY 403
SHAVER RD
ROAD
Duff's Corners
HAMILTON
REG RD 222
SAWMILL RD
ANCASTER GEOGRAPHIC TP
ONONDAGA TP
Trinity
Carluke
Springvale
Garner Corner
Trans Sta
Arena
Poultry Farm
Golf Course
Gun Club
Trans Stations
Radio 150
Oil Pipeline
3 Lines
52
2
53
I
II
III
IV
V
VI
VII
775
800
750
762
756
747
736
717
713
700
703
704
694
675
674
42
43
36
37
19
16
25
N
1mi
1km

Partially Integrated Site Option
PI-2W / LF-10W and PI-2W / LF-11W
Access Route Options
FIGURE 15.8

j) Partially Integrated Site Options PI-2W/LF-10W, PI-2W/LF-11W

As illustrated on Figure 15.8 no alternative access route options were identified to PI-2W, from PI-2W to LF-10W or LF-11W or for direct access LF-10W and LF-11W. The preferred access routes are as follows:

to PI-2W

1. from 403 - west on Hwy. 2; south on Shaver Road (local road) to PI-2W

to LF-10W

1. from 403 - west on Hwy. 2; south on Regional Road 222; west on Sawmill Road (local Road) to LF-10W

PI-2W to LF-10W

1. west on Hwy. 2/53; south on Regional Road 222; west on Sawmill Road (local road) to LF-10W

to LF-11W

1. from 403 - west on Hwy. 2; south on Regional Road 222 to LF-11W

PI-2W to LF-11W

1. west on Hwy. 2/53; south on Regional Road 222 to LF-11W

Although preferred access routes were selected for the LF-10W, LF-11W, PI-2W siting combinations the site selection team recognized that minor modifications to local access routes might be required in subsequent stages on the basis of more detailed analysis. Such local modifications were not expected to alter the relative suitability of the LF-10W, LF-11W, PI-2W partially integrated options, as compared with other siting options.

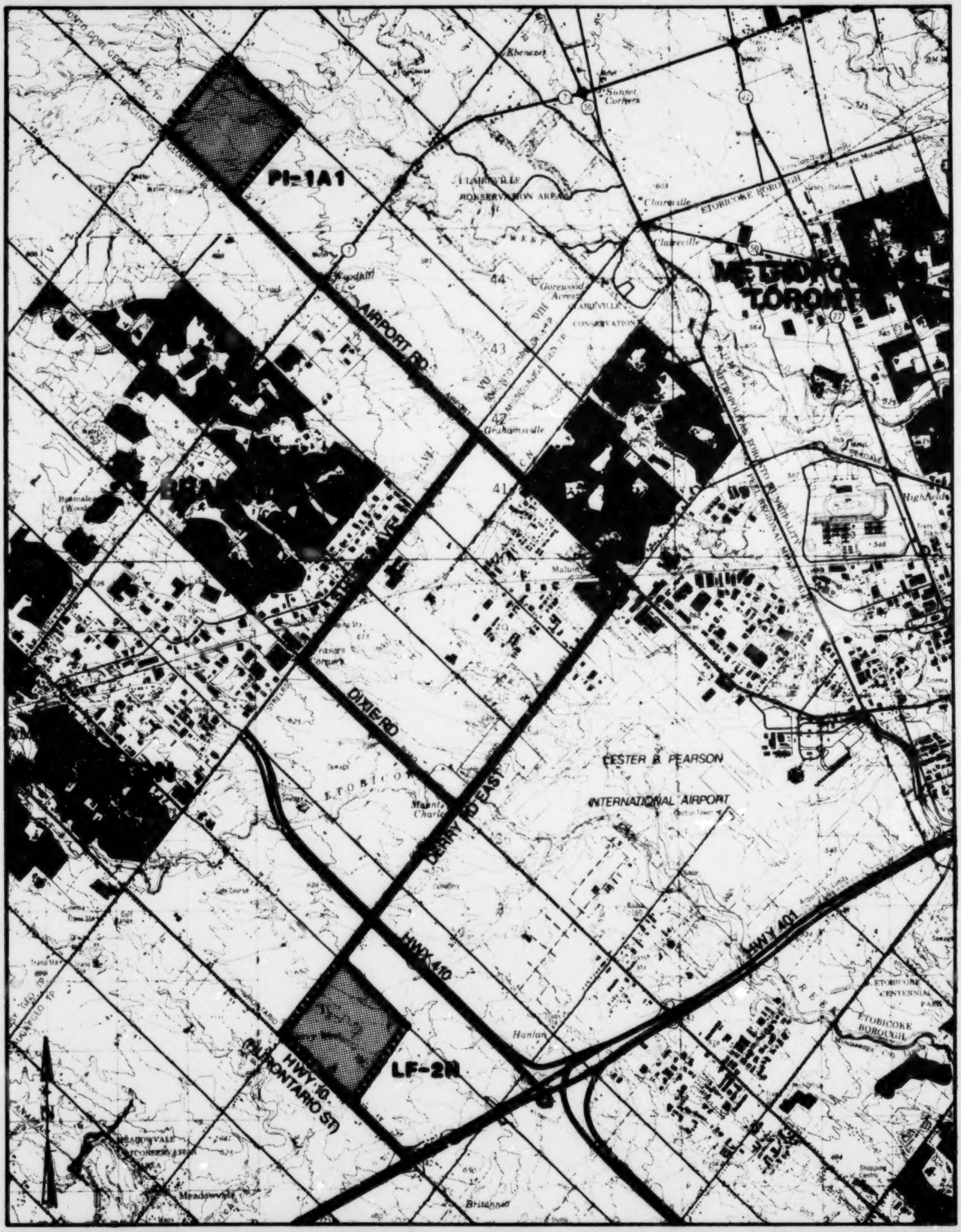
k) Partially Integrated Siting Options - LF-2N/PI-1A1

Four access route options were identified to PI-1A1. These options included the following:

1. from 401 - north on Hurontario Street (Hwy. 10); east on Derry Road East; north on Airport Road to PI-1A1
2. from 401 - north on Hurontario Street (Hwy. 10); east on Derry Road East; north on Dixie Road; east on Steeles Ave; north on Airport Road to PI-1A1
3. from 410 - east on Derry Road East; north on Airport Road to PI-1A1
4. from 410 - east on Derry Road East; north on Dixie Road; east on Steeles Avenue; north on Airport Road to PI-1A1

These four options are illustrated on Figure 15.9. The major differences among the options are highlighted in Table 15.7 and detailed in Table J.7 in Appendix J. After comparing the three options the site selection team concluded that both Option 2 and Option 4 should be retained. The major reasons for this preference included the following:

- Options 1 and 3 both involve 3 km through strip residential development;


PI-1A1
AIRPORT RD
DIXIE RD
DERRY RD EAST
STEELES AVE
HWY 410
HWY 401
HWY 10 (HURONTARIO ST)
LF-2N
LESTER B. PEARSON INTERNATIONAL AIRPORT
METROPOLITAN TORONTO
CLAIREVILLE CONSERVATION AREA
ETOBICOKE BOROUGH
Ebenezer
Sunset Corners
Claireville
Woodhill
Gorewood Acres
Grahamsville
Malton
Highfields
Meadowvale
Britannia
Hunlan
ETOBICOKE CENTENNIAL PARK
44
43
42
41

Partially Integrated Site Option
LF-2N/PI-1A1
Access Route Options
FIGURE 15.9

TABLE 15.7

Summary Rankings - Access Route Options[1]

LF-2N/PI 1A1

TO PI 1A1

SUMMARY FACTORS / OPTIONS	1	2	3	4
SOCIAL	4	2	3	1
LAND USE	2	1	2	1
TRANSPORTATION	2	2	1	1
AGRICULTURE	3	3	1	2
STREAM CROSSINGS	moderate	moderate	moderate	moderate
HYDROGEOLOGY	1	1	1	1

PI-1A1 to LF-2N

SUMMARY FACTORS / OPTIONS	1	2
SOCIAL	2	1
LAND USE	2	1
TRANSPORTATION	1	1
AGRICULTURE	2	1
STREAM CROSSINGS	moderate	moderate
HYDROGEOLOGY	1	1

---

[1] The access route options are ranked from the most (1) to the least (4) (2) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

- the differences between Options 2 and 4 are very limited;

- the retention of both Options 2 and 4 would ensure that direct access would be facilitated from waste sources from both the east (Option 4 - 410) and the west (Option 2- 401 - Hurontario).

Two access route options were identified between PI-1A1 and LF-2N. These options included the following:

1. south on Airport Road; west on Derry Road;

2. south on Airport Road; west on Steeles Avenue; south on Dixie Road; west on Derry Road.

These two options are also illustrated on Figure 15.9. The major differences between the options are highlighted in Table 15.7 and detailed in Table J.8 in Appendix J. After comparing the two options the site selection team concluded that Option 2 was preferred. The major reason for this preference was that Option 1 involves 3 km through strip residential development.

In terms of access to LF-2N (in the event that a physical/chemical treatment plant is established at the site) two options were identified. These options included the following:

1. from 401 - north on Hwy. 10 to LF-2N

2. from 410 - west on Derry Road W. to LF-2N.

As described in the analysis of access route options to PI-1A1 the differences between these options are very limited. In addition the retention of both options would facilitate access from both the east (Option 2) and the west (Option 1). The site selection team, therefore, decided to retain both options for the purposes of comparing the siting options.

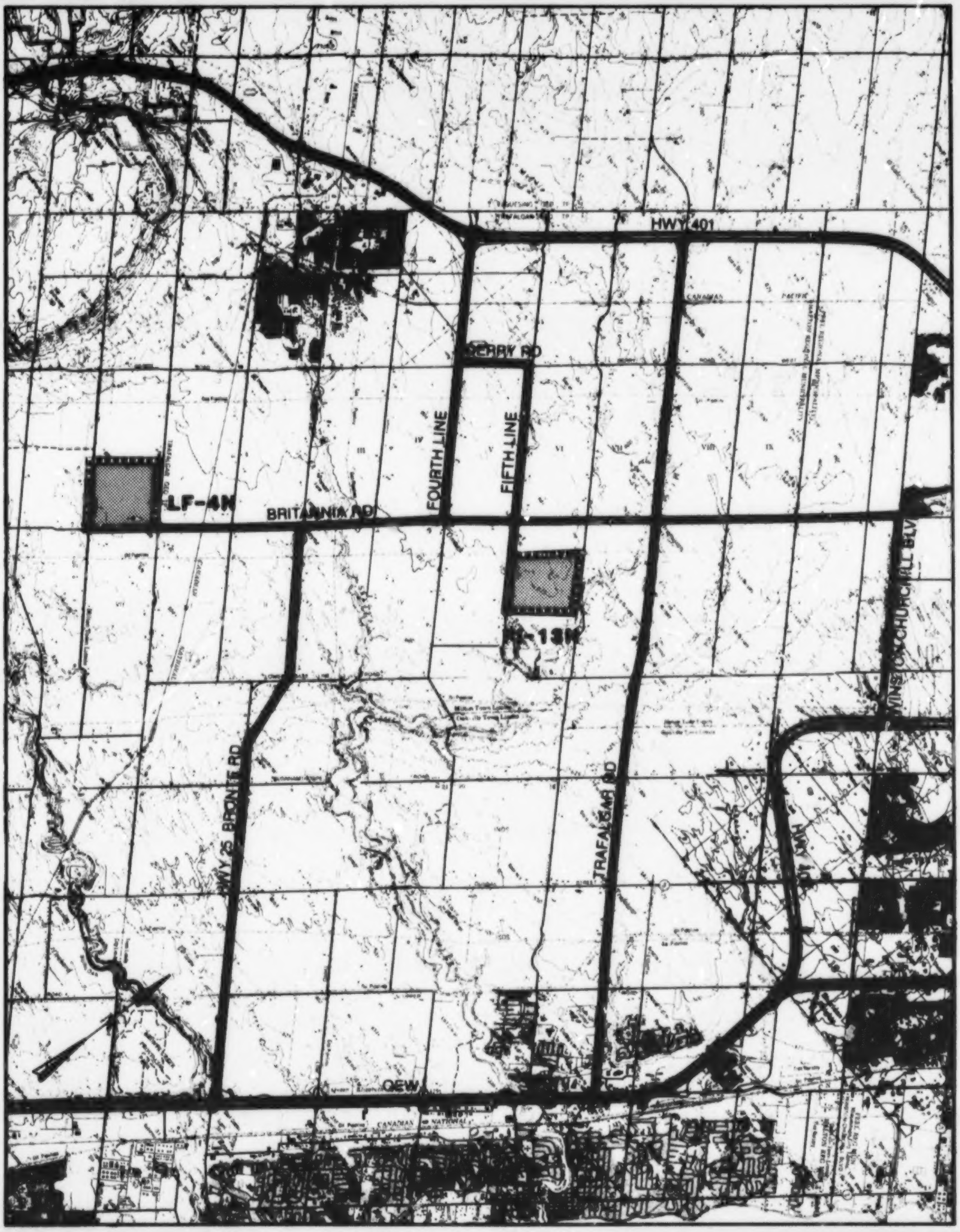
1) Partially Integrated Siting Option LF-4N / PI-13N

Six access route options were identified to PI-13N. These options included the following:

1. from 401 - south on Fourth Line Road (partially a local road); east on Britannia Road; south on Fifth Line Road (local road) to PI-13N
2. from 401 - south on Fourth Line Road; east on Derry Road; south on Fifth Line Road (local road) to PI-13N
3. from 401 - south on Trafalgar Road; south on Fifth Line Road (local road) to PI-13N
4. from 403 - north on Winston Churchill Blvd; west on Britannia Road; south on Fifth Line Road (local road) to PI-13N
5. from QEW - north on Trafalgar Road; west on Britannia Road; south on Fifth Line Road (local road) to PI-13N
6. from QEW - north on Hwy. 25 (Bronte Road); east on Britannia Road; south on Fifth Line Road (local road) to PI-13N

The six options are illustrated on Figure 15.10. The major differences among the options are highlighted in Table 15.8 and detailed in Table J.9 in Appendix J.

As illustrated on Figure 15.10, three of the options involve access from the north (from Hwy. 401), and three involve access from the south. As


HWY 401
DERRY RD
FOURTH LINE
FIFTH LINE
LF-4N
BRITANNIA RD
PI-13N
HWY 25 BRONTE RD
TRAFALGAR RD
WINSTON CHURCHILL BLVD
QEW
CANADIAN NATIONAL
CANADIAN PACIFIC
1km

Partially Integrated Site Option
LF-4N / PI-13N
Access Route Options
FIGURE 15.10

TABLE 15.8

Summary Rankings - Access Route Options[1]

TO PI-13N

SUMMARY FACTORS / OPTIONS	1	2	3	4	5	6
SOCIAL	2	1	3	1	3	2
LAND USE	2	1	3	5	6	4
TRANSPORTATION	1	1	2	3	4	1
AGRICULTURE	2	1	3	3	3	3
STREAM CROSSINGS	major	minor	major	major	major	major
HYDROGEOLOGY	1	2	6	4	5	3

[1] The access route options are ranked from the most (1) to the least (6) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

special wastes are expected to be coming to the site from both the north and the south, the site selection team recognized that access from both the north and south would be necessary. The three northern options were, therefore, compared against one another and the three southern options were compared against one another.

As outlined in the review of access options of LF-4N the access options to PI-13N analysis was limited to existing roads. The timing of the two proposed roads in the vicinity of the sites (Dorval Way and the Hwy. 403 extension) was uncertain with construction of both roads potentially not occurring until after the 1990s. It was, however, recognized that as the site selection proceeds, and as the timing of these two routes is confirmed, further consideration will need to be given to minimizing potential impacts through the use of these two routes.

After comparing the three access route options from the north the site selection team concluded that either Options 1 or 2 was preferred. The reasons for this preference were as follows:

- Option 3 (Trafalgar Road) involves a higher transportation accident frequency, greater potential agricultural impacts, more community and recreational features and a longer distance across sensitive hydrogeologic lands than Option 1;

- there are very few differences between Option 1 and Option 2 (Fourth Line - Derry Road); further consideration of both these options was considered desirable by the site selection team.

After comparing the three access route options from the south, the site selection team concluded that Option 6 was preferred. The major reasons for this preference included the following:

- from a transportation safety perspective (transportation accident frequency index) Option 6 (Highway 25) was more desirable than Options 4 (Winston Churchill Blvd.) or 5 (Trafalgar Road);

- Option 5 involves access through the built-up area of Oakville;

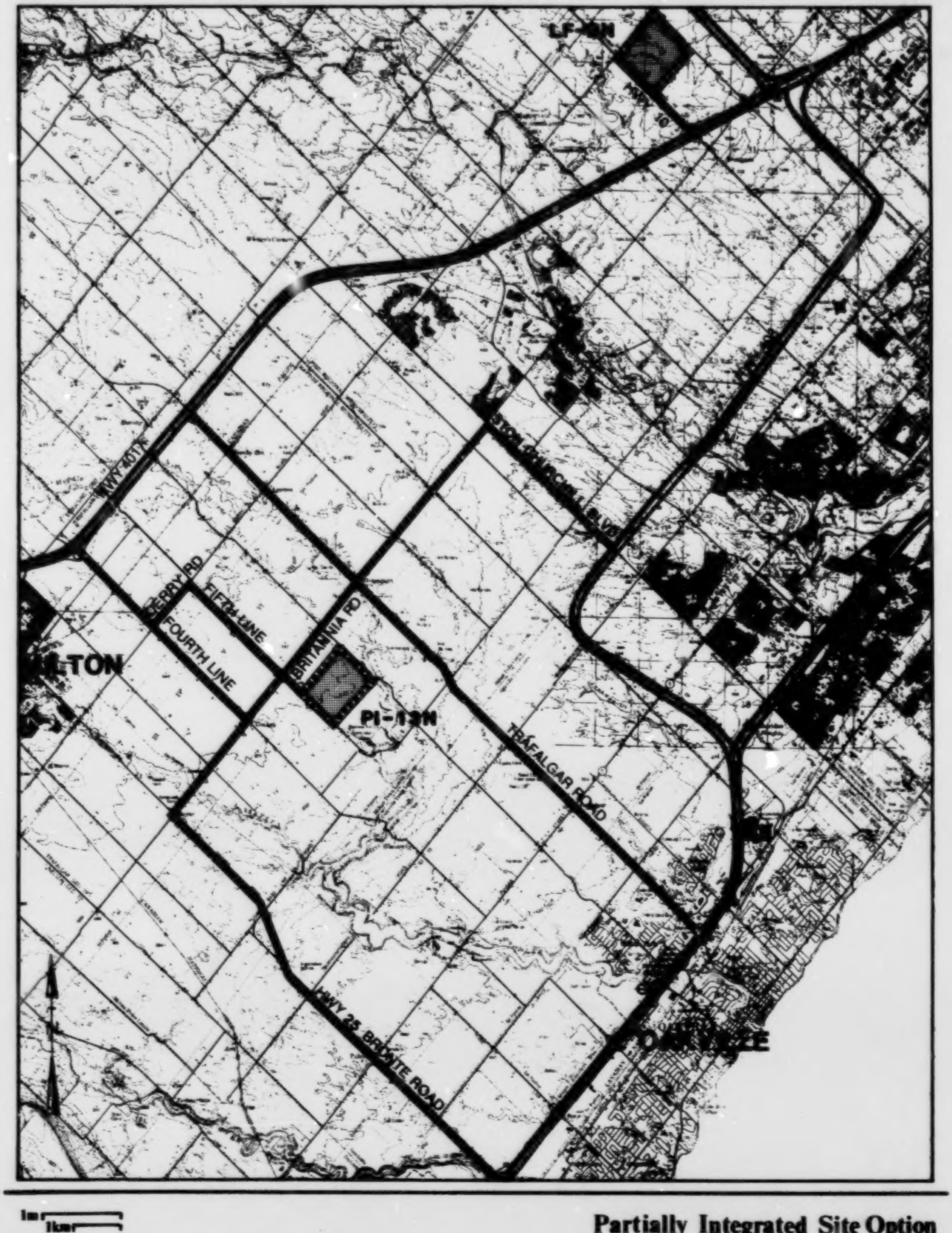
- Option 4 involves a greater transportation accident frequency, a greater distance through hydrogeologically sensitive lands and a comparable social impact ranking and more land use constraints. Access for Option 4 from the south and east is inhibited by the fact that direct access to Highway 403 from the QEW from the east is not possible. Truck access to Winston Churchill Boulevard from the west would therefore involve movement through the built-up area of Mississauga/Oakville on Winston Churchill Boulevard between the QEW exit and Highway 403.

After reviewing the preferred and rejected access routes to PI-13N the site selection team concluded that local access in close proximity to the site should be reviewed further in Phase 4A. These additional investigations were not considered necessary to proceed with the comparative analysis of siting options.

Only one access route linking PI-13N to LF-4N was identified - north on Fifth Line and west on Britannia Road to LF-4N. This access route is illustrated on Figure 15.10.

As detailed in subsection (c), eight access route options to LF-4N were identified and compared. As discussed in subsection (c) and as illustrated on Figure 15.2, the preferred access routes to LF-4N from the north and the south respectively are:

- from the north - from 401 - south on Fourth Line Rd.; west on Britannia Road


LF-2N
HWY 401
DERRY RD
FIFTH LINE
FOURTH LINE
BRITANNIA RD
PI-13N
TRAFALGAR ROAD
HWY 25 BRONTE ROAD
1mi
1km

Partially Integrated Site Option
LF-2N / PI-13N
Access Route Options
FIGURE 15.11

TABLE 15.9

Summary Ratings - Access Route Options[1]

LF-2N/PI-13N

PI-13N to LF-2N

SUMMARY OPTIONS FACTORS	1	2	3
SOCIAL	3	2	1
LAND USE	2	3	1
TRANSPORTATION	2	1	1
AGRICULTURE	2	1	1
STREAM CROSSINGS	major	major	major
HYDROGEOLOGY	3	2	1
	Traf.	Fourth Line Britannia	Fourth Line Derry

---

[1] The access route options are ranked from the most (1) to the least (3) suitable. Stream crossings have been rated in terms of major, moderate minor and no constraints.

- from the south - north on Hwy 25 (Bronte Road); west on Britannia Road

m) Partially Integrated Siting Option - LF-2N/PI-13N

The access route options to PI-13N were described in subsection (l) and are illustrated on Figure 15.11. The preferred access routes to PI-13N, from the north and south respectively, are:

- from the north - from 401 - south on Fourth Line Road; east on Britannia Road, south on Fifth Line Road

- from the south - from QEW, north on Hwy. 25 (Bronte Road) east on Britannia Road, south on Fifth Line Road

The access route options to LF-2N are described in subsection (k) and are illustrated on Figure 15.9. The preferred access routes to LF-2N from the east and the west respectively are:

- from the east - from 410 west on Derry Road to LF-2N

- from the west - from 401 north on Hwy. 10 to LF-2N

Three access route options were identified between PI-13N and LF-2N. These options included the following:

1. north on Fifth Line Road; east on Britannia Road; north on Trafalgar Road (Regional Road 3); east on 401; north on Hwy. 10 to LF-2N

2. north on Fifth Line Road; west on Britannia Road; north on Fourth Line Road; east on Hwy. 401; north on Hwy. 10 to LF-2N

3. north on Fifth Line Road; west on Derry Road; north on Fourth Line Road; east on 401; north on Hwy. 10 to LF-2N

These three options are illustrated on Figure 15.11. The major differences among the options are highlighted in Table 15.9 and are detailed in Table J.10 in Appendix J. After comparing the three access route options the site selection team concluded that either Option 2 or 3 were preferred. The reasons for this preference were as follows:

- Option 1 (Trafalgar Road) involves greater potential agricultural impacts, more community and recreation features, a larger estimated population abutting the access routes, greater potential agricultural impacts and a longer distance through hydrogeologically sensitive lands;

- Options 2 and 3 have very few differences between them. The site selection team concluded that both options should receive more detailed consideration in Phase 4A. The site selection team also concluded that local access options in the immediate vicinity of PI-13N should receive more attention in Phase 4A. These additional investigations were not considered necessary to proceed with the initial comparative evaluation of siting options.

n) Partially Integrated Siting Option LF-2N / PI-1N

The access route options to LF-2N are described and evaluated in subsection (c). As discussed in subsection (d) and as illustrated on Figure 15.9, the preferred access routes to LF-2N from the east and the west respectively are:

- from the east - from 410 west on Derry to LF-2N

- from the west - from 401 north on Hwy. 10 to LF-2N

Seven access route options were identified to PI-1N. These options included the following:

1. from 401 - south on Hwy. 25; west on Steeles Ave; south on First Line Road to PI-1N

2. from 401 - south on Hwy. 25; west on Steeles Ave; south on Tremaine Rd.; east on Britannia Road to PI-1N

3. from 401 - south on Fourth Line Road; west on Britannia Road to PI-1N

4. from 401 - south on Trafalgar Road; west on Britannia Road to PI-1N

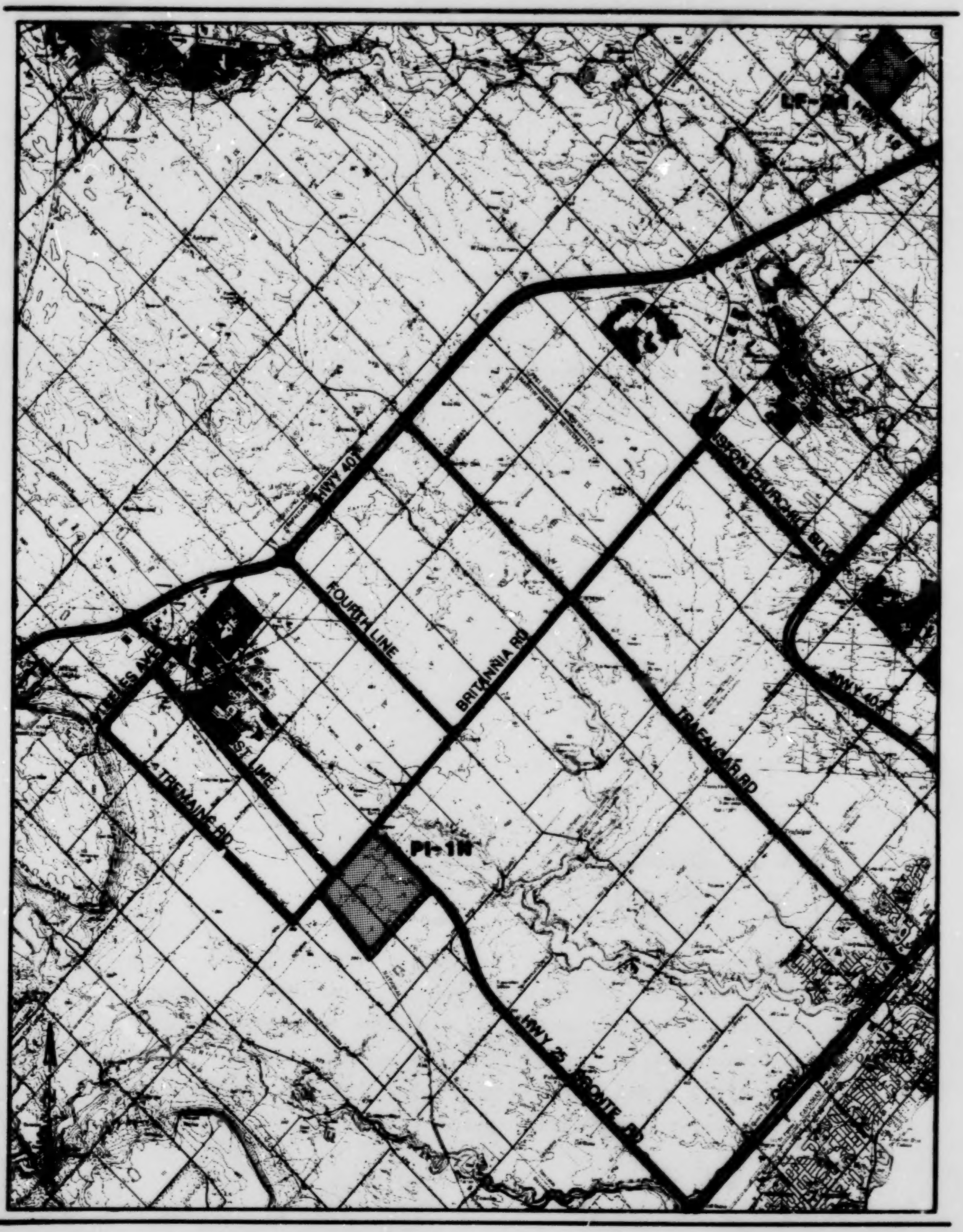
5. from 403 - north on Winston Churchill Blvd; west on Britannia Road to PI-1N

6. from QEW - north on Trafalgar Road; west on Britannia Road to PI-1N

7. from QEW - north on Hwy. 25 (Bronte Road) to PI-1N

These seven options are illustrated on Figure 15.12. The major differences among the options are highlighted in Table 15.10 and detailed in Table J.11 in Appendix J.

As illustrated on Figure 15.12, four of the options involve access from the north (from Hwy. 401) and three involve access from the south. As special wastes will be coming to the site from both the north and the south, it was recognized that access from both the north and south would be necessary. The four north options were, therefore, compared against one another and the three south options were compared against one another.


LF-2N
HWY 10
HWY 401
FOURTH LINE
BRITANNIA RD
WINSTON CHURCHILL BLVD
STEELES AVE
FIRST LINE
TREMAINE RD
PI-1N
TRAFALGAR RD
HWY 403
HWY 25
BRONTE RD

Partially Integrated Site Option
LF-2N/PI-1N
Access Route Options
FIGURE 15.12

TABLE 15.10

Summary Rankings - Access Route Options[1]

LF-2N/PI-1N

TO PI-1N

SUMMARY FACTORS / OPTIONS	1	2	3	4	5	6	7
SOCIAL	3	3	1	2	1	3	2
LAND USE	6	5	1	2	4	7	3
TRANSPORTATION	2	4	3	5	6	7	1
AGRICULTURE	2	2	1	3	3	3	1
STREAM CROSSINGS	major	moderate	major	major	major	major	major
HYDROGEOLOGY	3	2	1	7	5	6	4

PI-1N to LF-2N

SUMMARY FACTORS / OPTIONS	1	2	3	4
SOCIAL	2	1	4	3
LAND USE	2	1	4	3
TRANSPORTATION	4	2	1	3
AGRICULTURE	2	3	3	1
STREAM CROSSINGS	major	major	major	moderate
HYDROGEOLOGY	4	1	3	2

---

[1] The access route options are ranked from the most (1) to the least (7) (4) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

As previously indicated, access route options were limited to existing routes. This restriction was based on the recognition that the timing of the two proposed roads in the vicinity of the sites (Dorval Way and the Highway 403 extension) is uncertain, with construction of both roads potentially not occurring until after the 1990s. It was, however, recognized that as the site selection proceeds and as the timing of these two routes are confirmed, further consideration will be given to minimizing potential impacts through the use of these two routes.

After comparing the four access route options from the north, the site selection team concluded that Option 3 (Fourth Line) was preferred. The reasons for this preference were as follows:

- Options 1 and 2 (Highway 25) were considered relatively less desirable than Option 3 because they involved access through built-up portions of Milton;

- Option 4 was considered less desirable than Option 3 as it has a much higher transportation accident frequency, a greater distance to a freeway, much greater potential agricultural impacts, a greater distance through hydrogeologically sensitive lands, passes more community and recreation features, involves a longer distance through strip residential development and passes more communities.

On the basis of the analysis undertaken it was therefore concluded that Option 3 was the preferred northern access route to PI-1N.

After comparing the three access route options from the south the site selection team concluded that Option 7 (Highway 25) was preferred over Options 5 (Winston Churchill Blvd.) and 6 (Trafalgar Road). The major reasons for this preference included the following:

- Options 5 and 6 have much higher transportation accident frequencies, are further removed from freeways, and have greater potential agricultural impacts, more severe land use constraints, and greater distances through hydrogeologically sensitive lands;

- Option 6 has the additional disadvantage of access through the built-up area of Oakville;

- Access for Option 5 from the south and east is inhibited by the fact that direct access to Highway 403 from the QEW from the east is not possible. Truck access to Winston Churchill Boulevard from the west would therefore, involve movements through the built-up area of Mississauga/Oakville on Winston Churchill Boulevard between the QEW exit and Highway 403.

Access routes to LF-2N are described in subsection (k) and are illustrated on Figure 15.9. The preferred access routes to LF-2N from the east and west respectively, include the following:

1. from the east - from 410, west on Derry Road

2. from the west - from 401, north on Hwy. 10

Four access route options were identified between PI-1N and LF-2N. These options included the following:

1. east on Britannia Road; north on Trafalgar Road; east on Hwy. 401; north on Hwy. 10 to LF-2N

2. east on Britannia Road; north on Fourth Line Road; east on Hwy. 401; north on Hwy. 10 to LF-2N (preferred - Phase 3 Report)

3. north on First Line Road; east on Steeles Avenue; north on Hwy. 25; east on Hwy. 401; north on Hwy. 10 to LF-2N

4. west on Britannia Road; north on Tremaine Road; east on Steeles Avenue; north on Hwy. 25; east on Hwy. 401; north on Hwy. 10 to LF-2N.

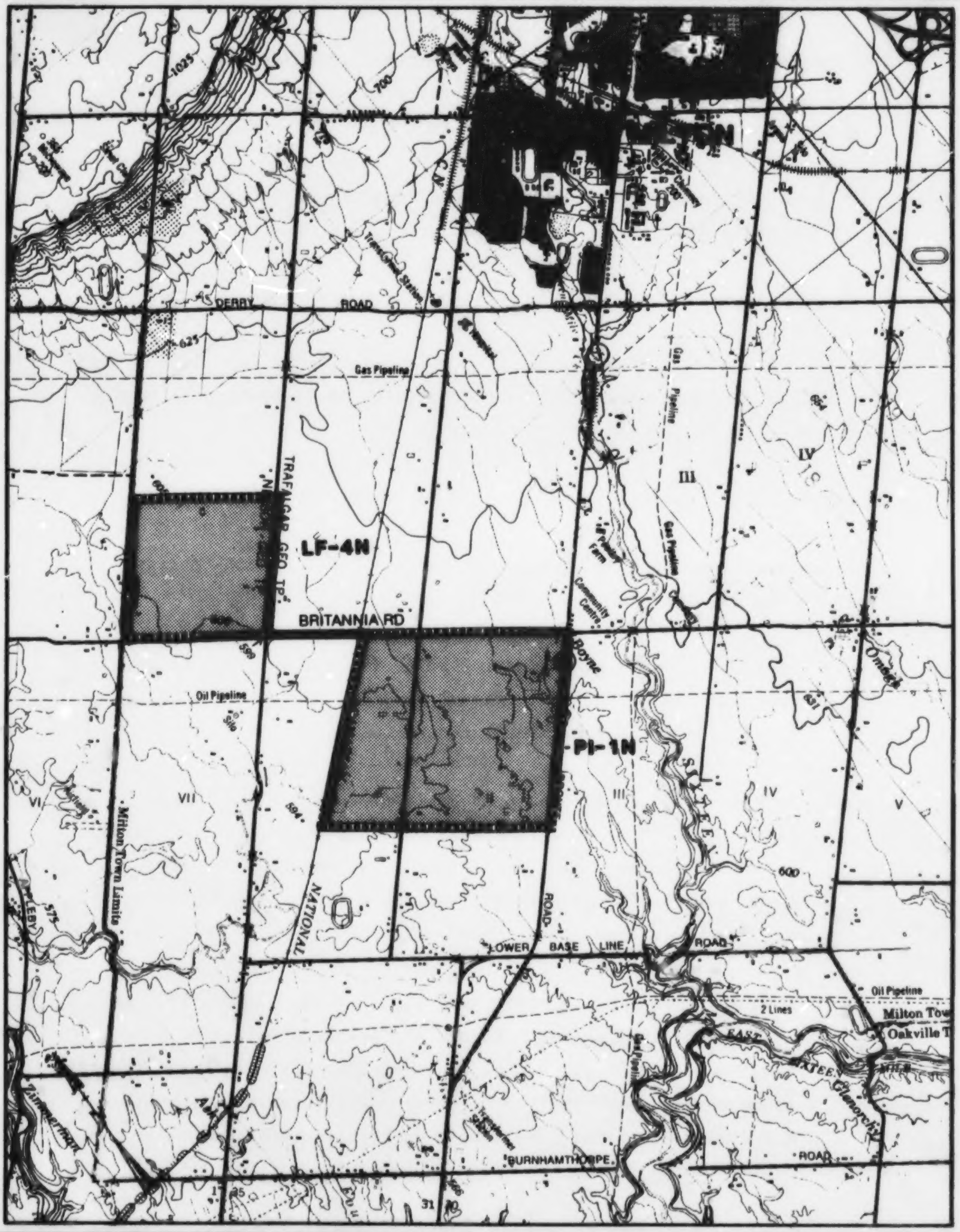
These four options are illustrated on Figure 15.12. The major differences among the options are highlighted in Table 15.10 and are detailed in Table J.12 in Appendix J. After comparing the four access route options the site selection team concluded that Option 2 (Fourth Line) was preferred. The reasons for this preference were as follows:

- Options 3 (First Line) and 4 (Tremaine Road) were considered less desirable as portions of those routes travelled through the built-up areas of Milton;
- Option 1 (Trafalgar Road) was considered less desirable than Option 2 because it has a somewhat greater transportation accident frequency, involves a longer distance through hydrogeologically sensitive lands and passes more community and recreation features.

o) Partially Integrated Siting Option - LF-4N/PI-1N

The access route options to LF-4N are described and evaluated in subsection (c). As described in subsection (c), and as illustrated on Figure 15.2, the preferred access routes to LF-4N from the north and south, respectively, are:

- from the north - from 401, south on Fourth Line Road; west on Britannia Road;
- from the south - north on Hwy. 25 (Bronte Road) west on Britannia Road.


1025
700
625
C N
DERBY
ROAD
Gas Pipeline
Gas Pipeline
TRAFALGAR GEO. TP.
LF-4N
BRITANNIA RD
Boyne
Community Centre
III
IV
Omagh
631
684
Oil Pipeline
599
594
PI-1N
VI
VII
Milton Town Limits
NATIONAL
ROAD
600
III
IV
V
575
LOWER
BASE
LINE
ROAD
Oil Pipeline
2 Lines
Milton Tow
Oakville T
EAST
SIXTEEN
MILE
Zimmerman
BURNHAMTHORPE
ROAD
1m
1km

Partially Integrated Site Option
LF–4N/PI–1N
Access Route Options
FIGURE 15.13

The access route options to PI-1N are described in subsection (n), and are illustrated on Figure 15.12. The preferred access routes to PI-1N from the north and south respectively are:

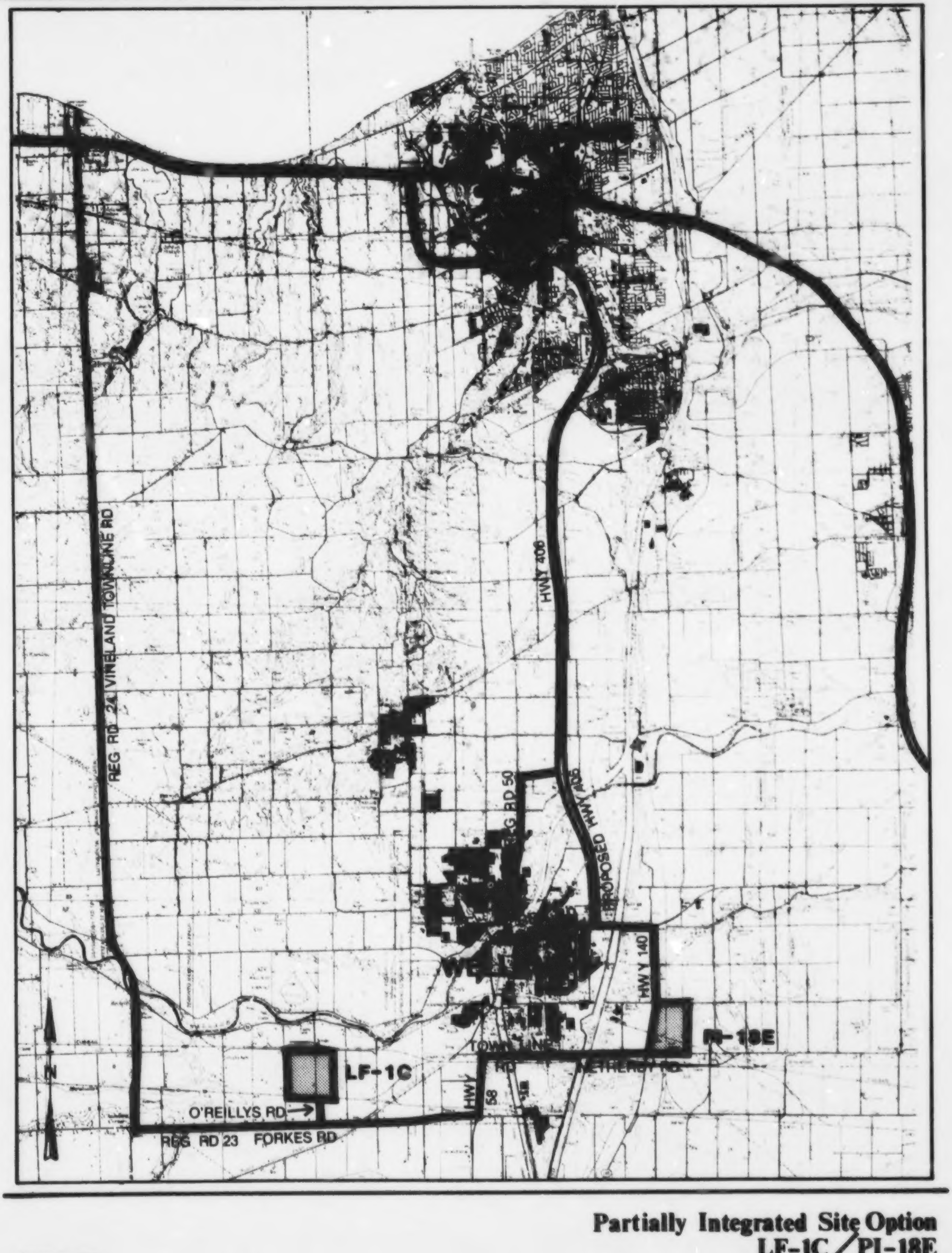
- from the north - from 401; south on Fourth Line Road; west on Britannia Road;
- from the south - from QEW; north on Highway 25 (Bronte Road) to PI-1N.

The preferred access route between PI-1N and LF-4N is west on Britannia Road to LF-4N, as illustrated on Figure 15.13.

p) Partially Integrated Siting Option - PI-18E/LF-1C

Three access route options were identified to LF-1C. These options included the following:

1. from QEW - south on Regional Road 24 (Victoria Avenue/Vineland Townline Road); east on Regional Road 23 (Forkes Road); north on O'Reilly's Road (local road) to LF-1C
2. from 406 (proposed) - east on Regional Road 27 (East Main Street); south on Hwy. 140; west on Netherby Road (local road); south on Rusholme Road (local road); west on Townline Road; south on Hwy. 58; west on Regional Road 23 (Forkes Road); north on O'Reilly's Road (local road) to LF-1C.
3. from 406 (existing) - south on Regional Road 50 (Hwy. 58); east on Division St. (Regional Road 527); north on Burgar St. (Regional Road 527); east on Regional Road 27 (East Main Street); south on Hwy. 140; west on Netherby Road (local road); south on Rusholme Road (local road); west on Townline Road; south on Hwy.


REG RD 24 VINELAND TOWNLINE RD
HWY 406
REG RD 50
PROPOSED HWY 406
HWY 140
TOWN LINE RD
NETHERBY RD
HWY 58
PI-18E
LF-1C
O'REILLYS RD
REG RD 23 FORKES RD
N
1mi
1km

Partially Integrated Site Option
LF-1C / PI-18E
Access Route Options
FIGURE 15.14

TABLE 15.11

Summary Rankings - Access Route Options[1]

LF-1C/PI-18E

TO LF-1C

SUMMARY FACTORS / OPTIONS	1	2	3
SOCIAL	2	1	3
LAND USE	2	1	3
TRANSPORTATION	3	1	2
AGRICULTURE	3	1	2
STREAM CROSSINGS	major	moderate	major
HYDROGEOLOGY	1	2	3

TO PI-18E

SUMMARY FACTORS / OPTIONS	1	2
SOCIAL	1	2
LAND USE	1	2
TRANSPORTATION	1	2
AGRICULTURE	1	2
STREAM CROSSINGS	Minor	Major
HYDROGEOLOGY	1	2

---

[1] The access route options are ranked from the most (1) to the least (3) (2) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

58; west on Regional Road 23 (Forkes Road); north on O'Reilly's Road (local road) to LF-1C.

The three options are illustrated on Figure 15.14. The major differences among the options are highlighted on Table 15.10, Table J.13 in Appendix J.

The site selection team concluded that the preferred access route to LF-1C was Option 2 (406 proposed). The major reasons for this preference included:

- less severe potential social, land use and agricultural constraints;
- a lower transportation accident frequency;
- a lower stream crossing rating.

Two access route options to PI-18E were identified. These options included the following:

1. from 406 (proposed) - east on Regional Road 27 (East Main Street); south on Hwy. 140 to PI-18E
2. from 406 (existing) - south on Regional Road 50 (Hwy. 58); east on Division St. (Regional Road 527); north on Burgar St. (Regional Road 527); east on Regional Road 27 (East Main Street); south on Hwy. 140 to PI-18E

These options are illustrated on Figure 15.14. The major differences between the options are highlighted in Table 15.11 and detailed on Table J.14 in Appendix J.

After comparing the two options the site selection team concluded that Option 1 was preferred. The reasons for this preference were as follows:

- Option 2 has a much higher transportation accident frequency, involves a greater distance through populated areas and strip residential development, and passes many more community and recreation features.

Highway 406 (proposed) is scheduled for completion prior to the opening of the OWMC facilities. The selection of the Highway 406 access option does, however, result in some degree of uncertainty being associated with the access routes to PI-18E and LF-1C.

The site selection team concluded that the preferred access route between LF-1C and PI-18E was:

1. south on Hwy. 140; west on Netherby Road (local road); south on Rusholme Road (local road); west on Townline Road; south on Hwy. 58; west on Regional Road 23 (Forkes Road); north on O'Reilly's Road (local road) to LF-1C.

q) Partially Integrated Siting Option - PI-27E/LF-1E

The three access route options to LF-1E are described in subsection (g) and are illustrated on Figure 15.6. The preferred access route to LF-1E, is from the QEW, west on Regional Road 47 (Lyon Creek Road), south on Regional Road 98 (Montrose Road), west on Carl Road.

The three access route options to PI-27E are essentially the same as the three access options for LF-1E (See Table J.15 in Appendix J). These options are described in subsection (g) and are illustrated on Figure 15.15. The major differences among the options are highlighted in Table 15.11. The site selection team concluded that the preferred access route to PI-27E was west on Regional Road 47 (Lyons Creek Road/Biggar Road) from the QEW to PI-27E.

The site selection team concluded that the preferred access route between PI-27E and LF-1E was east on Biggar Road (Regional Road 47); south on Regional Road 98 (Montrose Road); west on Carl Road (local road).

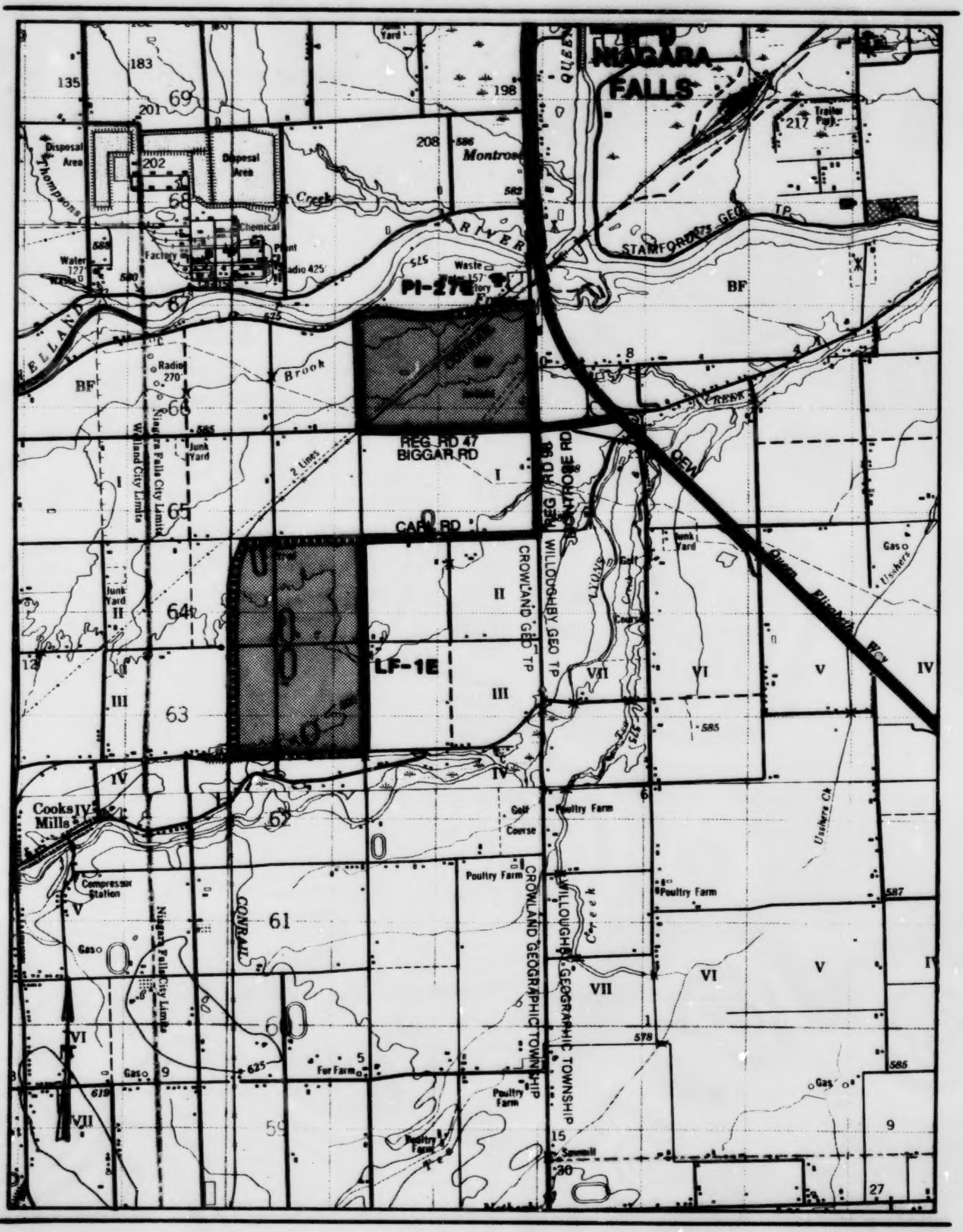
Although the preferences described above were considered by the site selection team sufficient to proceed with the comparative evaluation of siting options it was also recognized that further investigations of local access road options, in the vicinity of LF-1E and PI-27E, would be necessary in Phase 4A.

r) Partially Integrated Siting Option - PI-27E and LF-3E

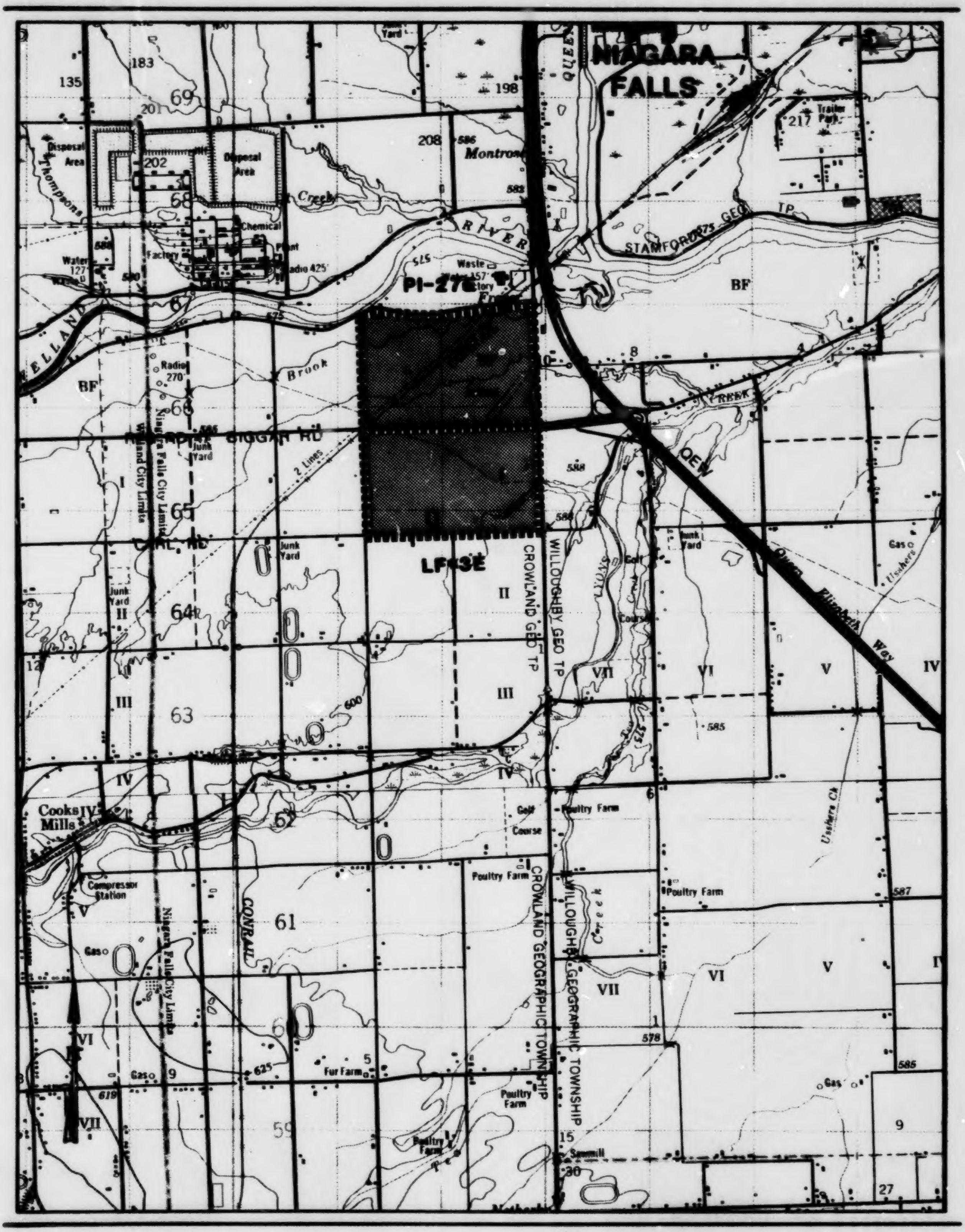
The three access route options to LF-3E are described in subsection (h) and are illustrated on Figure 15.7. The preferred access route to LF-3E is west on Regional Road 47 (Lyons Creek Road/Biggar Road) from the QEW to LF-3E.

The three access route options to PI-27E are described in subsection 9 above. The site selection team concluded that the preferred access route to Pl-27E was west on Regional Road 47 (Lyons Creek Road/Biggar Road) from the QEW to Pl-27E.

Since LF-3E and PI-27E are abutting sites, the site selection team, therefore, concluded that a detailed exploration of local access options in the immediate proximity of the two sites would not be necessary to proceed with initial comparative evaluation. In the event that the Pl-27E/LF-3E siting option was retained for more detailed consideration during Phase 4A, the site selection team concluded that local access options including the possible provision of a new road between the two sites could be explored at that time.


NIAGARA FALLS
PI-27E
LF-1E
REG RD 47
BIGGAR RD
CARL RD
REG RD 98
MONTROSE RD
CROWLAND GEO TP
WILLOUGHBY GEO TP
CROWLAND GEOGRAPHIC TOWNSHIP
WILLOUGHBY GEOGRAPHIC TOWNSHIP
QEW
Queen Elizabeth Way
STAMFORD GEO TP
RIVER
WELLAND
Thompsons Creek
Brook
Montrose
Disposal Area
Chemical Plant
Factory
Waste Water Factory
Radio 425'
Radio 270'
Water
Welland City Limits
Niagara Falls City Limits
Junk Yard
Trailer Park
Golf Course
Poultry Farm
Fur Farm
Compressor Station
Gas
Cooks Mills
CONRAIL
Lyons Creek
Ushers Ck
Sawmill
BF
I
II
III
IV
V
VI
VII
69
68
67
66
65
64
63
62
61
60
59
1m
1km

Partially Integrated Site Option
LF-1E/PI-27E
Access Route Options
FIGURE 15.15


NIAGARA FALLS
PI-27E
LF-3E
Montrose
Disposal Area
Chemical Plant
Factory
Waste Water Factory
RIVER
WELLAND
Thompsons Creek
Brook
BIGGAR RD
CARL RD
Junk Yard
Radio 270'
Radio 425'
2 Lines
STAMFORD GEO TP
CROWLAND GEO TP
WILLOUGHBY GEO TP
CROWLAND GEOGRAPHIC TOWNSHIP
WILLOUGHBY GEOGRAPHIC TOWNSHIP
Niagara Falls City Limits
Welland City Limits
QEW
Queen Elizabeth Way
Ushers Ck
Golf Course
Poultry Farm
Fur Farm
Compressor Station
Gas
Cooks Mills
CONRAIL
Trailer Park
Sawmill
BF
I
II
III
IV
V
VI
VII
1m
1km

Partially Integrated Site Option
LF-3E/PI-27E
Access Route Options
FIGURE 15.16

TABLE 15.12

Summary Rankings - Access Route Options[1]

LF-1E/PI-27E

TO PI-27E

SUMMARY OPTIONS FACTORS	1	2	3
SOCIAL	3	1	2
LAND USE	3	1	2
TRANSPORTATION	3	1	2
AGRICULTURE	3	1	2
STREAM CROSSINGS	major	no	moderate
HYDROGEOLOGY	3	1	2

[1] The access route options are ranked from the most (1) to the least (3) suitable. Stream crossings have been rated in terms of major, moderate, minor and no constraints.

15.4 CONCLUSIONS

The preferred access routes to be used in the initial comparative evaluation of the siting options are shown on map 13 in Volume 4 - Map Portfolio.

16. APPLICATION OF FACTORS - SITING OPTIONS

16.1 FACTOR APPLICATION PROCESS

The initial comparative evaluation process began with eight integrated and ten partially integrated siting options. The locations of these potential sites are shown on Figure 11.1.

The first step in the comparative evaluation of siting options was the preparation of a series of composite constraint maps by Dillon's site selection staff based on inputs received from the other site selection consultants (Maps 14 to 31 in Volume 4 Site Selection-Map Portfolio). A series of detailed composite matrices were also prepared by Dillon's site selection staff using the inputs from the other site selection consultants. These matrices specify the relative differences among the siting options for over 100 indicators. Tables K1 to K3 in Appendix K present the data collected for all candidate site identification indicators for all siting options.

The composite maps highlight the location of the major site and site vicinity considerations contained in the composite matrices. The boundaries of the potential sites and the study areas surrounding the emissions areas of the PI sites (as well as the PI portion of integrated sites) and the landfills are also delineated on the composite maps.

Site boundaries have been modified somewhat from those employed in the identification of potential sites to reflect land ownership limits, roads and utilities. In one case (PI-1N) this procedure resulted in the PI 1000 metre study area boundary occurring within the site acquisition boundary. In order to ensure that potential conflicts with adjoining areas were adequately addressed the 1000 metre study area boundary was extended outwards beyond the acquisition boundary.

In three cases (LF-1E, LF-10W and PI-1N) the sites were large enough that either of two possible locations could be developed for the facility components within each site. Study area boundaries for each of these parcel options are shown on separate maps. The treatment of these parcel options is discussed in Section 16.2.

The composite matrices are structured in terms of site, site vicinity and access route indicators for the human environment, the physical and biological environment, and cost factors. The matrices specify both factors and indicators for the integrated and partially integrated siting options.

As indicated in the matrices, because of the regional nature of the data base and the site-site vicinity connections, the physical and biological indicators apply to both the site and site vicinity. A distinction is drawn in the matrices between local and regional access routes. In the case of the partially integrated options, further distinctions are drawn among routes to the PI site, routes from the landfill site to the PI site, and routes to the landfill site (in the event that a physical/chemical treatment plant is established in association with a landfill).

Although the site selection team concluded that the matrices and the maps provided an adequate information base for use in comparative evaluation, it was evident that their complexity made them difficult to use directly for decision-making purposes. It was also recognized that the matrices and maps failed to reflect the overall factor rankings. In order to further facilitate comparisons of the siting options, two summary matrices were prepared by Dillon's site selection staff based on inputs received from the other site selection consultants (Tables 16.1 and 16.2) - one for the integrated and one for the partially integrated siting options. In addition, a summary table highlighting the overall ratings of siting options was prepared (Table 16.3).

TABLE 16.1

Comparative Evaluation of Siting Options (Integrated)

FACTOR	LF-10W	LF-11W	LF-1E	LF-3E	LF-3C	LF-8C	LF-9C	LF-4N
Biophysical (hydrogeology, hydrology, biology, air dispersion/ receptors)	• Level 3 - hydrogeology • major biological constraints - portions of SEU • potential air receptor constraint - sensitive crops/ livestock • minor air dispersion constraint - local topography	• Level 3 - hydrogeology • potential air receptor constraint - sensitive crops/ livestock • minor biological constraint - wooded area • minor air dispersion constraint - local topography	• moderate potential air dispersion constraint - existing pollution levels, population exposure (Niagara Falls) • Level 2 - hydrogeology • major biological constraint - SEU and other wooded areas	• moderate potential air dispersion constraint - existing pollution levels, population exposure (Welland and Niagara Falls) • major constraint - hydrogeology (inadequate soil depth) • SEUs on site and adjacent to site	• Level 2 - hydrogeology • potential air receptor constraint - sensitive crops/ livestock • moderate biological constraint - wooded areas and Beaver Creek	• Level 1 - hydrogeology • potential air receptor constraint - sensitive crops/ livestock	• Level 1 - hydrogeology • potential air receptor constraint - sensitive crops/ livestock	• Level 2 - hydrogeology • major potential air dispersion constraint - elevated receptor (Niagara Escarpment), population exposure (Milton) • potential air receptor constraint - sensitive crops/ livestock
Social (land use, economic, social, agriculture)	• rural area, mix of dwellings • agricultural area • transport of partially treated wastes through agricultural area	• rural area, mix of dwellings • agricultural area • transport of partially treated wastes through agricultural area • century farm and historic homestead in site vicinity • greater number of residences in closer proximity than LF-10W • potential archaeological constraint • no stack height restriction advised	• agricultural area but subject to urban shadow influences • transport of partially treated wastes through agricultural area • relatively large number of residences on site and in site vicinity	• within urban shadow area - close proximity to future industrial area • Hungarian Cultural Centre and possible historic building	• rural area • very lengthy transport through agricultural areas and through population concentrations • Elcho United Church and cemetery on perimeter of site	• rural area • least suitable of central integrated sites in terms of agricultural impacts • lengthy transport through agricultural areas and through population concentrations	• rural area • lengthy transport through agricultural areas and through population concentrations	• urban fringe area • century farm • few residences on site and in site vicinity
Transportation and Utilities	• good regional access - proximity to Highway 403	• good regional access - proximity to Highway 403	• long haulage • quite direct access to QEW	• long haulage • adjacent to QEW	• very poor regional access; well removed from freeway system	• poor regional access - well removed from freeway system	• poor regional access - well removed from freeway system	• good regional access; short significant interference with local airport
Costs	• low overall costs (land acquisition and transportation costs low)	• low overall costs (land acquisition and transportation costs low)	• moderately high costs (transportation costs high)	• moderately high costs (transportation costs high)	• moderate costs (transportation costs moderately high)	• moderate costs (transportation costs moderately high)	• moderate costs (transportation costs moderately high)	• low overall costs (transportation and land acquisition costs low)

TABLE 16.2

Comparative Evaluation of Siting Options (Partially Integrated)

FACTOR	LF-2N/PI-1A1	LF-2N/PI-1N	LF-4N/PI-1N	LF-1C/PI-18E	LF-10W/PI-2W	LF-11W/PI-2W	LF-1E/PI-27E	LF-4N/PI-13N	LF-2N/PI-13N
Biophysical (hydrogeology, hydrology, biology, air dispersion*/ receptors) * air dispersion factors not considered for landfill only sites	• Level 3 - hydrogeology • PI-1A1 - moderate potential air dispersion constraint - population exposure (Brampton)	• Level 3 - hydrogeology • PI-1N - moderate air dispersion constraint - elevated receptor (Niagara Escarpment), population exposure (Milton)	• Level 2 - hydrogeology PI-1N - moderate air dispersion constraint - elevated receptor (Niagara Escarpment), population exposure (Milton)	• Level 1 - hydrogeology • PI-18E - moderate potential air dispersion constraint - existing pollution levels, population exposure (Welland) • LF-1C - Level 3 - drainage	• Level 3 hydrogeology - • PI-2W - moderate potential air dispersion constraint - topography (hilly terrain), population exposure (Ancaster) • biological constraint - SEU present on LF-10W	• Level 3 hydrogeology - • PI-2W - moderate potential air dispersion constraint - topography (hilly terrain), population exposure (Ancaster) • minor biological constraints associated with both sites, wooded areas	• Level 2 - hydrogeology • LF-1E major biological constraint - SEU and other wooded areas • PI-27E - major biological constraint - SEU in study area • PI-27E - moderate potential air dispersion constraint - existing pollution levels, population exposure (Niagara Falls)	• Level 2 - hydrogeology • PI-13N - minor potential air dispersion constraint - topography (Sixteen Mile Creek), population exposure (Milton) • PI-13N major biological constraint - SEU in SE edge of site	• Level 3 - hydrogeology • PI-13N - minor potential air dispersion constraint - topography (Sixteen Mile Creek), population exposure (Milton) • PI-13N - major biological constraint - SEU in southeast edge of site
Social (land use, economic, social, agriculture)	• both sites industrially designated (LF-2N proposed industrial - special policy area) - prestige and medium rather than heavy industrial • potential conflict with prestige industrial uses • LF-2N - residences and private and public recreation uses in site vicinity • LF-2N - small industrial/ commerical/public uses on site • PI-1A1 potential conflict with existing and future residential uses	• LF-2N-proposed industrial designation (special policy area) • PI-1N - urban fringe • LF-2N - small industrial/ commercial/public uses on site and in site vicinity • public and private recreation uses in site vicinity (LF-2N)	• urban fringe • greater displacement of agricultural uses than integrated options • LF-4N century farm	• LF-1C - proposed industrial designation • PI-18E - heavy industrial designation • PI-18E - greater number of residences in site vicinity and along access routes	• LF-10W - rural area • minimizes transport of partially treated wastes through agricultural areas • PI-2W - industrially designated	• LF-11W - rural area • minimizes transport of partially treated waste through agricultural areas • PI-2W - industrially designated (in part) • LF-11W - greater number of residences on site and in close proximity • LF-11W - historic homestead on site and century farm in site vicinity • LF-11W - potential archaeological constraint	• PI-27E - proposed industrial designation • LF-1E - agricultural areas but subject to urban shadow influences • minimizes transport of partially treated wastes through agricultural areas • PI-27E - existing industrial uses on site • LF-1E - residences on site and in site vicinity • potential archaeological constraint	• LF-4N/PI-13N - urban fringe area agricultural area - high capability • PI-13N - largely publicly owned • PI-13N - numerous residences in site vicinity • LF-4N - century farm	• PI-13N - urban fringe area • PI-13N - largely publicly owned • LF-2N - proposed industrial designation (special policy area) • LF-2N - potential conflict with prestige industrial uses • LF-2N - small industrial/ commercial/public uses on site - private and public recreation uses in vicinity
Transportation and Utilities	• good regional access; short haulage distance • LF-2N - transmission line crosses portions of site • PI-1A1 - remote possibility - airport constraint	• good regional access; short haulage distance • transmission line crosses portion of LF-2N • PI-1N potential interference with local airport	• good regional access; short haulage distance • PI-1N - potential interference with local airport	• very poor regional access; well removed from freeway system	• fairly good regional access; proximity to 403 • PI-2W proximity to Hamilton Civic Airport - stack less than 70 m	• good regional access; proximity to Highway 403 • PI-2W proximity to Hamilton Civic Airport - stack less than 70 m	• long haulage costs • adjacent to QEW	• good regional access; short haulage distance	• good regional access; short haulage distance
Costs	• very high overall costs (very high land acquisition; transportation costs low)	• overall costs low (high land acquisition costs - LF-2N; transportation costs moderate	• moderately low overall costs (low transportation costs)	• overall costs - moderately high (high transportation costs)	• low overall costs (land acquisition and transportation costs low)	• low overall costs (low land acquisition and transportation costs)	• overall costs - moderately high (transportation costs high)	• low overall costs (transportation and land acquisition	• moderately high overall costs; high land acquisition costs (LF-2N) • low transportation costs

Table 16.3[1]

Rating Given to Each Siting Option [1]

	INTEGRATED								PARTIALLY INTEGRATED								
	LF 10W	LF 11W	LF 1E	LF 3C	LF 8C	LF 9C	LF 3E	LF 4N	2N [3] 1A1	2N [3] 1N	4N [3] 1N	1C [3] 18E	10W[3] 2W	11W[3] 2W	1E [3] 27E	2N [3] 13N	4N [3] 13N
HYDROGEOLOGY	4	4	2	2	1	1	5	2	4	4	2	1	4	4	2	4	2
SURFACE DRAINAGE	1	1	2	2	2	2	2	1	1	2 (1N)	2 (1N)	4	1	1	2 (1E)	1	1
AIR DISPERSION/ AIR QUALITY [4]	3 (A) (T)	3 (A) (T)	3 (AQ) (P) (T)	4 (A)	5 (A)	3 (A)	3 (AQ) (P)	5 (T) (P)	5 (P)	3 (P) (T)	3 (P) (T)	3 (P) (AQ)	3 (A) (AQ) (T)	3 (A) (AQ) (T)	4 (P) (AQ) (T)	3 (A) (T) (P)	3 (A) (T) (P)
BIOLOGY	4	1	4	2	1	1	4	1	1	1	1	1	4	1	4	4	4
AGRICULTURE	3	3	2	4	4	4	1	3	1	2	3	1	2	2	1	2	3
ARCHAEOLOGY/ HERITAGE RESOURCES	1	4	2	1	2	2	2	2	3 (2N)	3 (1N)	3 (1N)	1	4 (2W)	4 (2W)	3 (27E)	3 (2N)	2 (4N)
LAND USE	1	3	3	3	3	3	1	3	1	4	3	1	1	3	1	4	4
SOCIAL AND ECONOMIC	3	3	1	4	3	4	2	3	2	3	3	2	3	4	2	3	3
TRANSPORTATION AND UTILITIES	3	2	4	4	4	4	4	1	2	3	1	4	5 (2W)	5 (2W)	4	3	3

[1] This table should be read in conjunction with Sections 16.3, 16.4 and 16.5 of this volume.

[2] The siting options have been rated on the basis of the five levels of suitability, as defined in Section 14.2 of this volume, ranging from most (Level 1) to least suitable (Level 5).

[3] Where the ratings of 2 sites vary, the more severe (higher) rating is given to the site combination.

[4] The air dispersion/air quality rating is composed of the following considerations: agriculture - sensitive crops and livestock (A), existing air quality (AQ), topographic limitations to dispersion (T) and population levels within five kilometres of the PI portion of the siting option (P).

Table 16.3 indicates the overall ratings given to each siting option. The basis for each level for each area of responsibility is highlighted in Table 14.1 of this report and detailed in the other consultants' reports. The siting options did not always correspond precisely to the indicator characteristics which defined each level. The decision by the other site selection consultants to place a siting option at a particular level, e.g. Level 1, was, in such cases, based upon a review of the range of characteristics of that siting option as compared with the characteristics which were used to define each factor ranking level. The siting option was then rated at the level whose characteristics most closely corresponded to the siting option's characteristics. Thus, if the siting option's characteristics matched the characteristics of a "low" land use constraint for all factors except for one, e.g. more than 10 parcels, the siting option would still be rated as a "low".

In the case of partially integrated options, where both the LF and PI sites were rated, the higher (more severe) rating was employed. The rationale for the judgements which were employed in these determinations are contained in the other site selection technical reports. The other site selection technical reports also contain more detailed maps of site and site vicinity characteristics as well as more detailed descriptions of site, site vicinity and access route features, constraints and opportunities.

As in the comparison of access route options the candidate site identification process involved the use of the summary rating table as well as the more detailed data contained in the summary and detailed matrices and composite maps. Consideration was also given to the more detailed information contained in the other consultants' technical reports.

The general approach used was to use the overall rating table as a means of structuring the evaluation process. Siting options which were rated as a Level 5, for one or more factors, for example, were reviewed first. This sequence of analysis reflected the priority attached to minimizing risk to human health. The concerns which led to these risk-related ratings were reviewed to determine if they were sufficient by themselves to warrant the rejection of a siting option. If there was any doubt regarding the potential acceptability of a siting option consideration was given to:

- the other risk-related ratings for the siting option and the site-specific basis for those ratings (again a reflection of the priority attached to minimizing risk to human health);
- the other impact-related ratings for the siting option and the site-specific basis for those ratings;
- the diversity of siting choices which would remain with respect to major risk-related siting considerations such as hydrogeology, transportation, air dispersion/air quality, surface drainage;
- the diversity of siting choices which would remain with respect to major potential impacts, e.g. biological, archaeological, social and economic and land use concerns;
- the level of confidence associated with the rating, i.e. the certainty of the data base;
- the potential for overcoming or significantly reducing the potential risk or impact;
- the diversity of siting choices which would remain with respect to the general preference for integrated over partially integrated facilities.

Siting options, which were rated as Level 4 for one or more factors, were then reviewed. The focus again was initially placed on the risk-related considerations which led to Level 4 ratings. Consideration was then given to impact-related considerations which led to Level 4 ratings. In the case of options rated at Level 4, no sites were eliminated solely on the basis of a Level 4 rating. In all cases consideration was given to the ratings for other factors, the diversity of siting choices remaining, the level of confidence associated with the data employed for rating purposes and the potential for mitigation.

Siting options which received ratings lower than Level 4 were then considered. Particular attention was devoted to siting options which had a number of relatively low ratings, e.g. Level 1 or Level 2, to determine if it was possible to move directly to the selection of a preferred site or sites. This analysis included consideration of the diversity of siting choices and the issues of level of confidence and the potential for mitigation.

The analysis of each siting option involved a review of the details specified in the summary and detailed matrices and maps. It also involved reviews of the more detailed analyses contained in the other site selection reports. Finally extensive discussions among the site selection team members took place. Consideration was given, during this process, to the concerns and issues raised through the public consultation program.

As in the consideration of access route options the conclusions which were reached by the site selection team reflected both the site option ratings and the more detailed data base. This approach was considered desirable for the following reasons:

- it ensured that all the data potentially relevant to the selection of candidate sites would be employed in the comparative analysis;

- excessive reliance was not placed on summary ratings which failed to reflect magnitudes of difference within and between ratings;

- considerations such as risks versus impacts, diversity of choice, levels of confidence and potential for mitigation could be included in the evaluation process;

- it was possible to structure the evaluation process to focus on major tradeoffs among a small number of alternatives;

- it was possible to use the site option ratings to structure the analysis in a systematic manner and yet at the same time allow for unique site-specific considerations;

- it was possible to present the evaluation process as a reasoned argument such that agencies and public understanding would be facilitated.

16.2 PARCEL OPTIONS[1] - LF-10W, LF-1E, PI-1N

16.2.1 Introduction

In considering potential sites the site selection team recognized that it would be desirable if the potential sites were all approximately the same size. In this way the potential impacts associated with the larger sites would not be overstated in the event that not all of the sites would be required for facility development. At the same time it was also recognized that the retention of larger sites would be advantageous in avoiding on-site constraints which might subsequently be identified through more detailed investigations.

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[1] Parcel options are different portions of a site potentially suitable for the establishment of facility components. If one parcel option were selected the site could be reduced in size by excluding the less suitable portions of the site.

The site selection team decided to compare the parcel options for the three largest potential sites. It was decided that a parcel would only be dropped from further consideration in the event that:

- it was clearly less suitable than the retained parcel for all major potential risks and impacts;
- it appeared unlikely that there would be a need for a high degree of flexibility with respect to the placement of the facility components on the site.

The site selection team also decided that, in the event that a clear choice could not be made between parcel options, the following steps would be taken to facilitate the comparative evaluation of siting options:

- the measurements and counting of features and facilities would be adjusted to avoid double counting, i.e. as a result of overlapping study area circles;
- where possible site constraints, e.g. lands of varying agricultural capability classes, would be converted to percentages of the site;
- an effort would be made in decision-making not to place too heavy a weight on indicators which varied greatly with changes in site size;
- whenever a preliminary conclusion was reached regarding the exclusion of a potential site the extent to which that decision

was dependent on site size differences would be reviewed. Where site size appeared to be a major determining factor in the conclusion, the tendency would be to retain the potential site for further consideration.

16.2.2 LF-10W

In the case of LF-10W (see Maps 20 and 21 in the Volume 4 - Map Portfolio) the differences between the two parcels 10aW (the north part of the site) and 10bW (the south part of the site) were considered by the site selection team to be very limited. The north part of the site was considered somewhat more biologically and hydrologically (surface drainage) constrained than the south part because of the presence of a small SEU and a small watercourse. The southern part of the site was considered somewhat more constrained agriculturally. The differences between the parcels were felt to be very limited from a transportation, land use, heritage and archaeological perspective. The northern parcel (10aW) was considered more constrained from a site size perspective because of the presence of a major hydro easement.

The two parcels appeared to be approximately equivalent in terms of hydrogeologic, social and economic conditions.

The site selection team decided that the differences between the two parcels appeared to be much too limited to indicate a clear preference. There were also a number of reasons why flexibility in facility placement was considered desirable for LF-10W including:

- the site was rated only as Level 4 (overall rating) hydrogeologically. More detailed hydrogeologic analysis might well reveal severe constraints with one or other of the parcels;

- interviews with site and site vicinity owners and tenants might well reveal significant agricultural and social constraints which were not evident from the roadside field investigations;

- it would be desirable to confirm the significance of the SEU on the basis of on-site investigations;

- the severity of the surface drainage constraints posed by the watercourse across the northern portion of the site would require more detailed investigations.

On the basis of the considerations cited above it was therefore, decided not to reject either of the LF-10W parcels.

16.2.3 LF-1E

LF-1E (See Maps 27 and 28 in Volume 4 Map Portfolio) is split into two parcels - a northern parcel (LF-1aE) and a southern parcel (LF-1bE). The site selection team concluded that the differences between the two parcels represented a direct tradeoff between potential biological, land use, social and agricultural impacts.

The northern part of the site contains an SEU. It is also somewhat closer to a nearby raised railway bridge which could present a constraint to air dispersion. The southern part of the site contains more land in cultivation (81 ha vs. 55 ha) and more land of agricultural capability class 1 equivalent (110 ha vs. 98 ha) than does the northern part of the site. In addition the southern parcel contains more residences in the vicinity of the site.

After considering these tradeoffs the site selection team concluded that there was insufficient information available regarding the relative differences between the parcels to select one parcel over the other.

There were also a number of reasons why flexibility in facility placement was considered desirable including:

- interviews with the site owners and site vicinity owners and tenants might reveal important agricultural, land use and social constraints which were not evident from the investigations undertaken to this point;

- it would be desirable to investigate further the extent to which the raised railway bridge represents a constraint to air dispersion.

After reviewing the considerations described above it was therefore concluded that one of the LF-1E parcels should not be selected over the other.

16.2.4 PI-1N

PI-1N (see Map 15 in Volume 4 Map Portfolio) is also divided into two parcels - a north-east and a south-west parcel. The differences between the two parcels were considered very limited by the site selection team. The southern parcel has somewhat more homes in the vicinity of the site. It also contains a building of possible historic importance in the buffer area. There were no other differences evident based on the analysis undertaken to this point.

The site selection team concluded that the differences between the two parcels appeared to be too limited to indicate a clear preference. There were also a number of reasons why flexibility in facility placement was considered desirable for PI-1N including:

- with a PI site there is somewhat more flexibility for adjusting the location of the operations area to minimize potential impacts;

- interviews with site and site vicinity owners and tenants might well reveal significant agricultural and social constraints which were not evident from the roadside field investigations;

- the site was rated as having medium archaeological potential. More detailed investigations could well reveal a preference for one parcel over another.

16.3 APPLICATION OF FACTORS - SITING OPTIONS WITH LEVEL 5 RATINGS

16.3.1 Introduction

As discussed in Section 16.1 the approach taken to the comparison of siting options was to use the overall ratings as a means of structuring the review of the siting options with the particular emphasis on minimizing relative risk to human health. The entire initial comparative evaluation data base was then employed in deriving the conclusions regarding site retention or exclusion. Each of the siting options which received a Level 5 overall rating (relatively severe risk) are reviewed in this section.

16.3.2 LF-3E

LF-3E was the one site which was rated by Gartner Lee Associates Ltd. as having a major hydrogeologic constraint. This rating stemmed from the shallow and variable soil conditions. The hydrogeologic investigations undertaken during the initial comparative evaluation stage, revealed that the site appeared to have soil depths ranging between 10 to 34 metres across the site and averaging less than 20 m. The guideline used by OWMC for assessing site suitability for a landfill or a fully integrated facility was greater than 10 m with areas of 20 m or more being considered first over areas with lesser thicknesses.

In addition to the depth limitations associated with LF-3E, variable soil conditions were a concern. As the Site Selection Process. Phase 3B: Selection of Candidate Sites - Physical Resources Report (Gartner Lee Associates Ltd., 1984b) points out, the water well data immediately adjacent to LF-3E demonstrated, "several occurrences of sand and/or sand till resting on bedrock which range up to 13 m in thickness. There are also several notations of sand lenses with the "clay" sequence...There are several similar occurrences north of the site LF-3E, particularly around Montrose."

As a result of these limitations, LF-3E received the lowest hydrogeologic suitability rating of all the potential sites. On the basis of these limitations it was concluded that LF-3E was hydrogeologically unsuitable and should be dropped from further consideration.

Hydrogeologic constraints alone were considered sufficient by the site selection team to drop LF-3E from further consideration. However, it also appeared that rejecting LF-3E would not unduly restrict the diversity of siting choices. LF-1E, a landfill site in close proximity to LF-3E was retained. LF-1E is preferred over LF-3E in terms of potential social impacts and has similar transportation, air quality/air dispersion, agricultural, biological and archaeological characteristics to LF-3E. LF-1E is somewhat more constrained than LF-3E in terms of land use considerations because LF-3E is immediately adjacent to a proposed industrial designation and is in close proximity to heavy and medium industrial uses and there are many residences on site and in the vicinity of LF-1E. The land use constraints associated with LF-1E were not considered sufficient to merit a Level 4 rating. In addition LF-1E is in close proximity to PI-27E. As a result the potential for a partially integrated facility with immediate access to the QEW was retained.

The rejection of LF-3E also meant the loss of the partially integrated option - LF-3E/PI-27E. As LF-3E was rejected early in the synthesis process the partially integrated option LF-3E/ PI-27E is not included in the composite matrices.

16.3.3 LF-4N

A regional analysis of air dispersion constraints (documented in Site Selection Process, Phase 3B: Selection of Candidate Sites - Atmospheric Conditions Report (Ontario Research Foundation, 1984) had indicated that this site was constrained because of its proximity to the Niagara Escarpment (potential impingement of emissions on the face of the Niagara Escarpment under certain meteorological conditions). Based on the regional data base, the site had been ruled out in terms of suitability for an incinerator in the OWMC Interim Phase 3 Report.

However, the boundaries of the air dispersion zones are approximate and the air dispersion constraint can potentially be mitigated. A further analysis of site suitability for an integrated facility in Phase 3B was, therefore, felt to be warranted by the OWMC management. The site selection team agreed with this decision.

As this decision represented a modification of an Interim Phase 3 decision, the Dillon site selection staff reviewed the other factors used to exclude areas at the candidate area identification stage (Phase 3A) to determine if there were any comparable situations which also warranted reconsideration. As indicated below no such situations were identified:

- in the case of other areas subject to air dispersion constraints, the other areas excluded were either subject to more than one air dispersion constraint or had other major limitations, e.g. specialty crops, well removed from waste sources, immediate proximity to Niagara River and no offsetting advantages, e.g. industrial and/or publicly held land;

- in the case of built up areas and specialty crops, the limits to these areas were well defined and delineated in a manner that retained any areas where there were doubts regarding potential suitability;
- in the case of hydrogeologic conditions, the boundaries of areas were defined in a manner that marginal areas on the borders of candidate areas were retained for further consideration;
- in the case of transportation constraints, the area excluded had no offsetting advantages in terms of such considerations as industrially designated or publicly held lands (the South Cayuga land assembly had previously been determined as being hydrogeologically unsuitable) , geological/hydrogeologic conditions or agricultural productivity or capability.

The results of the further air dispersion analysis by the Ontario Research Foundation (1984) rated LF-4N as the most constrained site in terms of air dispersion/air quality concerns. As air dispersion was considered to represent the major pathway into the environment for a PI facility the site selection team concluded that the retention of a siting option rated as a severe constraint from an air dispersion/air quality perspective would not be consistent with the goal of minimizing risk to human health.

At the same time the site selection team recognized that dropping LF-4N as an integrated site had significant diversity of siting choice implications. LF-4N is the one integrated site in the top regional access level and with a Level 2 (overall rating) hydrogeology category. It was also acknowledged that an integrated site at LF-4N would have the significant advantage of minimizing potential agricultural impacts (as compared with partially integrated options in association with PI-1N or PI-13N). Finally it was recognized that LF-4N is in a "marginal" air dispersion location (just within a broadly defined constrained area) and its rating was based on a regional analysis.

These diversities of choice and regional data base considerations was not considered sufficient by the site selection team to warrant retention of LF-4N (integrated) for detailed analysis in Phase 4A.

16.3.4 LF-8C

LF-8C was indicated by Ecologistics Ltd. and Deloitte, Haskins and Sells (1984a) as being the most constrained site in terms of sensitive agricultural receptors (crops and livestock) within a five kilometre radius of the site. The site selection team was not aware of evidence directly linking the long-term effects of stack and fugitive emissions on agricultural resources and, in turn, human health. At the same time the site selection team was also aware that research in this field is quite limited.

This, in the interest of minimizing potential risks to the levels of sensitive crops and livestock, was considered by the site selection team to be a major constraint. However, in view of the uncertainty associated with the nature and magnitude of such risks it was also concluded that consideration should be given to other relative advantages and disadvantages associated with LF-8C.

In reviewing the issue of diversity of siting choices the two sites which were considered most comparable to LF-8C were LF-3C and LF-9C. All three sites were rated favourable hydrogeologically by Gartner Lee Associates although LF-8C and LF-9C were considered to have somewhat greater average confining layer thicknesses. They also had comparable surface drainage, biological, archaeological/heritage resource, agricultural, land use, socio-economic and transportation characteristics.

Although all three sites were rated at the same level in terms of agricultural constraints, a three way comparison by Ecologistics Ltd. and Deloitte, Haskins and Sells concluded that LF-8C was more constrained than LF-3C and LF-9C. This conclusion was based on the larger number of farm building complexes situated on site LF-8C.

As the major advantage of LF-8C was its hydrogeologic suitability, the site selection team concluded that a major loss in diversity of siting choices would not occur if both LF-3C and LF-9C (two sites with generally similar hydrogeologic characteristics) were retained for further consideration. It was, therefore, decided to drop LF-8C from further consideration.

16.3.5 LF-10W/PI-2W and LF-11W/PI-2W

In the description of facility characteristics assumptions (see Table G.3 of this volume) it was pointed out that a stack height of 100 m was being assumed.

As part of the initial comparative evaluation analysis, discussions were held by Dillon's transportation staff with Transport Canada officials regarding conflicts between the potential sites and the operations of Transport Canada operated or licensed airports. As a result of these discussions it was determined that the maximum height of a stack at the PI-2W site was 70 m. Although it might have been possible to reduce the stack to below 70 m, to rely on a site which necessitated a shorter stack height was not considered by the site selection team to be a prudent course of action for the following reasons:

- it severely restricted the flexibility for the design and operations of the facility. Although a stack height of 70 m might be feasible, more detailed analysis might reveal it to be highly undesirable either from an operations or from an air dispersion/air quality perspective;

- it might restrict the potential for the expansion of either the OWMC facility, e.g. the addition of a second stack, or the expansion of the Hamilton Civic Airport;

- it was remotely possible that, even with a stack under 70 metres under very adverse climatic conditions, the stack could represent a hazard to air safety.

In addition to air safety constraints, PI-2W has a number of other associated drawbacks. It is, for example, considered marginal from a hydrogeologic perspective (a Level 4 overall rating). PI-2W also possesses major archaeological resource constraints.

In view of the potential limitations cited above, the site selection team, therefore, decided to drop PI-2W (and consequently LF-10W/PI-2W and LF-11W/PI-2W) from further consideration.

This decision had some implications from a diversity of siting choices perspective. It meant, for example, that both LF-10W and LF-11W would only be suitable as integrated facilities. As a result the conflict with agricultural uses for these two sites would tend to be greater. It would also mean that untreated wastes would have to be transported a greater distance through agricultural areas.

16.3.6 LF-2N/PI-1A1

An overview of population levels within a five km radius of PI-1A1 by the Institute of Environmental Research Inc. (1984) revealed substantially higher population levels than the levels around any other PI site. The existing population level (1981 census) around PI-1A1 was approximately 75,000 as compared with 23,000 for the site with second highest population level.

This estimate represents an understatement of population as the region surrounding the site has grown rapidly since 1981 and is expected to continue to grow rapidly throughout the operations period for the facility. Fairly high population levels may ultimately exist in all directions surrounding PI-1A1. Over time with the development of planned and proposed residential areas to the north, northwest and northeast of the site, built-up residential areas will be established somewhat closer than existing residential areas.

In considering the question of human health effects from stack emissions the site selection team was not aware of direct evidence that the very low levels of contaminants contained in stack emissions would affect human health either in the short or long term. At that same time it was also recognized that research into human health effects from long term exposure to small quantities of contaminants was quite limited. The site selection team, therefore, concluded that as airborne emissions represent the primary "pathway" into the environment with a PI site, the very large population levels surrounding the site should be considered a significant constraint. At the same time, in view of the uncertainty associated with the potential long-term health effects, it was important to consider the other constraints and opportunities associated with the LF-2N/PI-1A/siting option.

In the case of LF-2N the relatively large population levels within a five km radius of LF-2N (estimated at 17,300 in 1981) was not considered as a major constraint in terms of airborne emissions. As the sources of airborne emissions for a physical-chemical treatment plant are close to the ground it was recognized that a much more limited area could potentially be affected than would be the case with stack emissions. In the case of the physical-chemical treatment plant the area which might potentially be affected by airborne emissions (in terms of human health effects) was expected to be contained within the buffer limits used to define the boundaries of LF-2N[1]. In the event that further investigations revealed that airborne emissions could affect a wider area, the option remained of only establishing a standard landfill at the LF-2N site. The area which might be affected by airborne emissions from a landfill was expected to be very limited and well within the 500 metre study area surrounding the site. The magnitude and nature of such effects was considered a matter which should be addressed in greater detail during Phase 4A of the site selection process.

On the basis of the considerations cited above the site selection team, therefore, concluded that the population levels in the vicinity of LF-2N should not be viewed as a major siting constraint during the Phase 3B analysis but should receive more detailed consideration during Phase 4A.

In considering the treatment of PI-1A1 the site selection team recognized that the site had some additional risk and impact-related disadvantages. The transportation accident frequency index for the selected access route from Highway 401 to PI-1A1 is much higher than that to the other two PI sites north of Lake Ontario - PI-1N and PI-13N.

PI-1A1 is also located along the flight path to Lester B. Pearson International Airport. Based on discussions with Transport Canada officials by Dillon's transportation staff, it was indicated that PI-1A1 was a potential concern. The distance from the airport is such that it did not appear that a stack height of less than 100 metres would be required. More detailed investigations would be required to determine precisely the severity of the constraint - if any. Preliminary calculations by the Ontario Research Foundation suggested that the constraint was likely to be very minor. Transport Canada officials did, however, suggest that, where a choice existed, they would prefer stacks not be located on sites along flight paths to major airports even for locations as far removed from such airports as PI-1A1.

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[1] The technical basis for the determination of buffer area is detailed in the M.M. Dillon Limited Site Selection Process, Phase 3B: Selection of Candidate Sites - Facilities Characteristics and Technical Buffer Zones, 1984a.

In addition to the constraints cited above, the hydrogeologic rating of PI-1A1 was considered marginal. The site was rated as Level 4 (overall rating). Finally, it was noted that PI-1A1 possessed the disadvantage of being part of a partially integrated facility (a less desirable facility arrangement than a fully integrated facility) and being further removed from its associated landfill (LF-2N) than the other (retained) partially integrated options.

From an impact and cost perspective PI-1A1 was considered by the site selection team to have both advantages and disadvantages. The site is industrially designated, although for light-prestigious and general industrial uses. The LF-2N/PI-1A1 siting combination also represents the most expensive option (by a considerable margin) in terms of land acquisition costs. It was, however, recognized that when placed within the context of overall capital and operating costs (including the possible cost savings associated with short haulage distances), the high land acquisition costs may or may not be a significant constraint.

Notwithstanding the limitations cited above, the loss of PI-1A1 (in association with LF-2N) was considered by the site selection team to represent a considerable sacrifice in terms of the diversity of siting choices. As both sites are expected to be developed for industrial purposes, the LF-2N/PI-1A1 siting option was rated very highly from a social-agricultural - land use perspective. The siting option is also well located in terms of regional transportation access and is rated favourably in terms of potential biological impacts.

After considering the relative advantages and disadvantages associated with PI-1A1 the site selection team concluded that the risk-related concerns associated with PI-1A1 were such that it should not be retained for further consideration.

16.4 APPLICATION OF FACTORS - SITING OPTIONS WITH LEVEL 4 RATINGS

16.4.1 Introduction

The siting options which received one or more Level 4 overall ratings (major constraint) are reviewed in this section.

16.4.2 LF-10W

Site LF-10W was identified as having two major constraints - hydrogeology and biology. With respect to hydrogeology the site was rated as Level 4 (overall rating). Initial comparative evaluation work identified potential soil depth and variability constraints. As stated in Site Selection Process Phase 3B: Selection of Candidate Sites - Physical Resources (Gartner Lee Associates Ltd., 1984b) there is a considerable variability in the depth of suitable soils in this area surrounding the site.

"Water well data from six wells near the site indicate 22 to 23 m of "clay". Ten wells to the west of the site indicate approximately 10 to 15 m of "clay" and wells to the north indicate 9 to 24 m of "clay". Many of the wells terminate within the "clay" sequence. A significant number employ large diameter casings and rely on storage to sustain yield during peak usage periods (Gartner Lee Associates Ltd., 1984b)".

The Site Selection Process, Phase 3B: Selection of Candidate Sites - Physical Resources report (Gartner Lee Associates Ltd., 1984b) also suggests the strong possibility of variable subsurface conditions.

The variable depths of wells and the large casings suggest very strongly that the wells in the area are drawing water from thin sand lenses in the sequence. Some wells in the area penetrate through the sequence of varied silts, clays and sands and obtain water from the underlying dolostone of the Guelph Formation." (Gartner Lee Associates Ltd., 1984b).

Subsurface migration of containments is viewed as the primary pathway into the environment for a landfill. Therefore from a second level of protection perspective, the conclusion was reached by the site selection team that LF-10W should only be retained if it had significant offsetting benefits. The following conclusions were reached by the site selection team in comparing the relative advantages and disadvantages of LF-10W as compared with the other remaining siting options:

- the Level 1 surface drainage rating for LF-10W was not considered a major relative advantage as all but one of the remaining siting options were rated as Level 1 or Level 2;

- from an agricultural receptor point of view the site is rated as moderately low. However, this rating represents a combination of sensitive crops and livestock ratings. In terms of sensitive crops, LF-10W is on the borderline between moderate and high constraint. Thus it was concluded that there was no significant advantage associated with LF-10W in terms of agricultural receptors;

- in terms of air dispersion (a minor topographic constraint) and population levels, LF-10W was rated favourable. However, none of the retained siting options had a major air dispersion constraint and there remained a number of siting options (LF-3C, LF-9C, LF-1E and PI-13N) with population levels in the same range (0 to 5000);

- LF-10W received a major biological constraint rating. This rating resulted from the SEU in the north half of LF-10W. As previously discussed, LF-10W is sufficiently large that it might be possible to minimize the effects on the SEU. However, more detailed hydrogeologic and agricultural analysis could also result in the conclusion that the site could not be developed without the displacement of the SEU;

- LF-10W is located in a predominately agricultural area. The agricultural rating given to LF-10W was Level 3. In comparison to the other remaining siting options only LF-3C and LF-9C were considered more constrained than LF-10W (and LF-11W). Thus there appeared to be no appreciable agricultural advantages to retaining LF-10W;

- LF-10W received a heritage/archaeological rating of Level 1. Although this rating is considered desirable, only LF-11W and PI-2W were identified as possessing major archaeological/heritage constraints;

- LF-10W received a moderate constraint social and economic rating and a most suitable land use rating. These ratings stemmed from the relatively few residences on site and in the vicinity of the site. It was also a consequence of low land values. It was also however, recognized that the development of LF-10W as an integrated facility, would conflict with the agricultural land use pattern and character of the surrounding area;

- In terms of transportation and utility constraints, LF-10W was placed at the intermediate level - Level 3 based on its moderate regional access values and its moderate site and site vicinity constraints.

After reviewing the considerations described above the site selection team concluded that LF-10W did not possess any significant advantages which would offset its relative (particularly hydrogeologic) disadvantages. It was, therefore, concluded that LF-10W should be dropped from further consideration.

16.4.3 LF-11W

Site LF-11W was identified as possessing many of the same constraints as LF-10W. It also had two Level 4 constraints. In common with LF-10W it was only rated as Level 4 (overall rating) from a hydrogeologic perspective. In addition, it was identified as having a major archaeological/heritage constraint.

As with LF-10W, site LF-11W is located in an area with moderate variability with respect to geologic uniformity (a 2A area). A review of MOE - water well records indicated 18 to 26 m uninterrupted clay indicated on or adjacent to the site. However, a scattering of wells in the area also indicated thinner clay depths (4, 8, 9, 15 m). As described in Site Selection Process Phase 3B: Selection of Candidate Sites - Physical Resources report (Gartner Lee Associates Ltd., 1984b), 11 of those wells probably indicate the presence of a few scattered sand zones within the silt clay sequence. Thus although LF-11W appears have adequate silt clay soil depths the problem of variable soil conditions remains.

In view of the potential hydrogeologic constraints associated with LF-11W the site selection team concluded that the site should only be retained in the event that it possessed significant offsetting benefits not possessed by the other siting options. This conclusion was based on the principle that the local hydrogeologic setting should provide a second level of environmental protection.

The following conclusions were reached by the site selection team in comparing the relative advantages and disadvantages of LF-11W against the other remaining siting options:

- the Level 1 surface drainage rating for LF-11W was not considered a major relative advantage as all but one of the remaining siting options were rated Level 1 or Level 2;

- from an agricultural receptor point of view the site was rated as medium. However this rating represents a combination of sensitive crops and livestock ratings. In terms of sensitive crops LF-11W was placed in the most constrained category (second only to LF-8C). Thus it was decided that there was no appreciable advantage associated with LF-11W in terms of agricultural receptors;

- in terms of air dispersion LF-11W received a favourable rating on the basis of a minor topographic constraint. However, none of the retained siting options possessed major dispersion constraints and there remained a number of siting options (LF-3C, LF-9C, LF-1E, PI-13N) with population levels in the same range (0 - 5000);

- LF-11W received a favourable rating in terms of potential biological impacts. However, there appeared to be an adequate number of sites retained with either favourable biological ratings or where the potential remained for avoiding the displacement biological resources. Thus the loss of LF-11W was not considered to unduly restrict the diversity of siting options in terms of biological considerations;

- LF-11W is located in a predominantly agricultural area. The agricultural rating given to LF-11W was Level 3. In comparison to the other remaining sites, only LF-3C and LF-9C were considered more constrained than LF-10W and LF-11W. Thus there appeared to be no appreciable agricultural advantages to retaining LF-11W;

- LF-11W received a heritage/archaeological rating of Level 4. As such LF-11W was rated as having more severe archaeological/ heritage constraints than any of the retained siting options;

- LF-11W was rated as moderately suitable in terms of land use. The moderate suitability rating is possessed by many of the retained siting options including LF-4N/PI-1N, LF-1E, LF-3C and LF-9C;

- LF-11W was placed at Level 3 of overall suitability (moderate) in terms of socio-economic concerns. Three retained siting options (LF-1E, LF-1E/PI-27E, LF-2N/PI-1A1) were rated higher and four siting options (LF-2N/PI-1N, PI-1N/LF-4N, PI-13N/LF-2N, PI-13N/LF-4N) were placed at the same level. It was also recognized that the development of LF-11W as an integrated facility would conflict with the agricultural land use pattern and character of the surrounding area;

- in terms of transportation and utility constraints, LF-11W was placed at Level 2 based on its moderate regional access rating and its low site and site vicinity constraints.

After reviewing the considerations described above it was concluded that LF-11W did not possess any significant advantages which offset its relative (particularly hydrogeologic) disadvantages. It was therefore decided that LF-11W should be dropped from further consideration.

16.4.4 LF-1C/PI-18E

LF-1C was the only potential site to receive a Level 4 (overall) rating in terms of surface drainage constraints. The basis for this low rating was the flat relief of the site (poor surface drainage) and the absence of an existing outlet. A preliminary review of conditions in the area suggested that an outlet was feasible but it would require a structure under the Welland Station railway yard and a new outlet to the Welland River. The site also received a low rating in terms of susceptibility to flooding.

The analysis to this point had revealed only that the resolution of the surface drainage constraints on the site appeared to be feasible. There remained the danger that the more detailed investigations would reveal that the provision of a structure under the railway yard and a new outlet might prove to be either not feasible or particularly expensive. There was also the concern with relying on extensive engineering works. Such an approach was considered inconsistent with the principle of the local setting providing a second level of protection.

The surface drainage constraints cited above were not considered by the site selection team sufficient to warrant the rejection of LF-1C. It was instead concluded that the relative advantages and disadvantages (especially risk-related) associated with the LF-1C/PI-18E siting option should be reviewed further.

In terms of transportation risk the LF-1C/PI-18E siting option has the highest composite index of the retained partially integrated options. In addition the preferred access route to PI-18E involves access through the outskirts of the City of Welland (population 45,500). As previously noted access to PI-18E is also based on the use of the planned Highway 406 extension.

Although the 406 extension is expected to be completed before the opening of the OWMC facility, a deferral or cancellation of the 406 extension could necessitate a much greater diversion into the built-up areas of Welland.

In addition the PI-18E/LF-1C siting option possesses the risk, impact and cost-related disadvantages associated with a partially integrated facility.

The PI-18E/LF-1C siting option was not considered to have a significant advantage from an air dispersion/air quality perspective. PI-18E was rated as having a moderate potential constraint as a result of potential population exposure and ambient air quality.

LF-1C was placed in the most suitable hydrogeologic level - Level 1. LF-1C and PI-18E were also considered to have advantages from a land use, social-economic and agricultural perspective. These advantages stem from its heavy industrial (PI-18E) and proposed industrial (LF-1C) land use designations.

It was, however, concluded by the site selection team that the retention of LF-3C, LF-9C and LF-4N offered sufficient siting opportunities with respect to lands in the Level 1 and Level 2 - hydrogeology. It was also concluded that the land use, social and agricultural advantages associated with LF-1C/PI-18E were insufficient to offset its surface drainage and transportation risk and impact constraints. It was therefore decided that LF-1C/PI-18E siting option should be dropped from further consideration.

16.4.5 LF-1E

Site LF-1E was identified as having two Level 4 constraints - biology and transportation.

As previously indicated the site size of LF-1E is such that the potential exists for avoiding or at least minimizing potential adverse biological impacts. As long as this potential exists it was decided that it would be premature to reject the site because of potential biological impacts.

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[1] Refer to M.M. Dillon Ltd. (1984c) Site Selection Process. Phase 3B: Selection of Candidate Sites - Transportation for data on transport cost, accident probability and composite indicies.

Site LF-1E was also rated at Level 4 with respect to transportation and utilities. This rating stemmed from the relatively high composite index associated with the site. The accident probability for LF-1E is, however, lower than that of LF-3C and LF-9C. LF-1E has the additional transportation safety advantages of a short haulage distance from a 400 series highway, suitability for integrated facilities, and close proximity to an industrially designated PI site - PI-27E (a PI site with immediate access to the QEW).

Site LF-1E has a number of additional relative advantages which were considered by the site selection team to warrant its retention including:

- a favourable hydrogeologic rating (the site is rated at Level 2). The two integrated sites with similar hydrogeologic ratings (LF-3C and LF-9C) both have higher accident probability indices;
- LF-1E is only one of the three fully integrated sites remaining;
- LF-1E has lower potential on site, site vicinity and access road agricultural and socio-economic impacts than the other two retained integrated sites;
- it was concluded that the surface drainage constraints associated with LF-1E could be overcome by minor mitigative measures;
- the moderate air dispersion/air quality constraints were not deemed to be sufficient to warrant site rejection and were considered to be no more severe than any of the retained sites;
- the archaeological/heritage constraints associated with LF-1E were considered to be in the medium range (not a high or severe constraint and potentially mitigatible). The heritage/archaeological rating for the site was also (with the exception of LF-3C) as good as or better than the other retained sites;

- the socio-economic and agricultural ratings for LF-1E were comparable to or better than those associated with all the remaining siting options;

- the land use constraints associated with LF-1E were considered somewhat overstated in the sense of the number of homes on site and in immediate proximity of the site for, as previously indicated, not all of LF-1E is likely to be required for the establishment of the OWMC facilities.

On the basis of the reasons noted above it was concluded that the major constraints associated with LF-1E were not sufficient to warrant site rejection. In addition it was concluded that there were important relative advantages associated with LF-1E which favoured its retention for further consideration.

16.4.6 LF-3C and LF-9C

LF-3C and LF-9C both received Level 4 ratings in terms of potential agricultural, socio-economic impacts and transportation and utilities constraints. In addition LF-3C received a Level 4 rating for sensitive agricultural receptors. These constraint ratings largely resulted from the location of the sites in stable and productive agricultural areas well removed from major waste sources and from the 400 highway series.

Both LF-3C and LF-9C were, however, considered by the site selection team to possess significant offsetting benefits which warranted their continued consideration. As previously indicated, the primary potential pathway into the environment with an engineered landfill is through the ground water migration of contaminants. Both LF-3C and LF-9C received favourable hydrogeologic ratings (LF-3C - Level 2 and LF-9C - Level 1). Both sites are located over deep and consistent silt clay soils. As such the sites would minimize the potential for the ground water migration of contaminants.

The retention of sites with very favourable hydrogeologic conditions was considered by the site selection team as essential to maintaining the opportunity for the establishment of facility components in settings which kept to a minimum the potential for off-site migration of contaminants.

The retention of both LF-3C and LF-9C was considered by the site selection team to be necessary for a number of additional reasons, including the following:

- both sites have on-site and site vicinity constraints which could result in site rejection in Phase 4A. LF-3C, for example, contains the Beaver Creek floodplain. Based on the analysis undertaken to this point it appeared that it might be possible to develop the site outside the floodplain, with the institution of some minor mitigative measures. More detailed surface drainage analysis might however reveal more severe constraints than expected which could in turn necessitate site rejection. If LF-3C were to be excluded, there would only be one fully-integrated siting option remaining (LF-9C) which could be established over deep consistent silt clay soils;

- More detailed hydrogeologic investigations might also reveal unforeseen constraints which might necessitate the rejection of one of LF-3C or LF-9C. It is also possible that the on-site investigations and interviews with owners, tenants, local residents, experts, interest groups and municipal officials (scheduled for Phase 4A), could identify a major new constraint or constraints which might necessitate the rejection of one of the sites;

- The relative advantages and disadvantages associated with the two sites could also change as a result of on-site investigations and interviews. It is, for example, possible that the agricultural and social constraints associated with one of the sites might be much more severe than for the other site. Such differences might only emerge as a result of much more detailed investigations;

- LF-9C is located over a better quality and more regionally significant aquifer than LF-3C. Although the risk to the aquifer is expected to be minimal in both cases, it was considered advisable to retain LF-3C which is located over a less regionally significant aquifer;

- Both LF-3C and LF-9C were considered potentially constrained in terms of air dispersion/air quality for agricultural receptors. The difference between the sites was considered to be minimal. More detailed investigations may reveal that this problem is a relatively minor concern. It is also possible that such investigations might reveal either that agricultural receptors would be a major concern or that there is an appreciable difference between the two sites. The retention of both sites enables a more detailed exploration of the absolute and relative severity of the agricultural receptor issue;

- Although potentially constrained in terms of agricultural receptors LF-3C and LF-9C (particularly LF-3C) have very small population levels within a five km radius of the sites. Both sites were rated as having no apparent constraint in terms of existing pollutant levels, topography and local population levels. In relative terms LF-3C and LF-9C were the most favourably rated of the retained sites. The retention of both LF-3C and LF-9C was considered desirable in order that a more detailed exploration of the tradeoffs among air dispersion, air quality, population and agricultural receptor considerations could be undertaken;

- The Elcho Church and Cemetery are located at the northern limit of LF-3C. At the time of boundary delineation it was assumed that the site would be developed without displacing the church or cemetery or intruding into the floodplain to the south of the church and cemetery. In the event that site development under these preconditions is not found to be possible or if the effects on the church and cemetery from site development is considered to be unacceptable, it was considered important to retain another site with comparable hydrogeologic conditions. A potential historical building was also identified on LF-9C. As the building's significance had not been verified it was concluded that this constraint should be subjected to more detailed consideration;

- Sites LF-3C and LF-9C are fully integrated sites. There was only one other fully integrated siting option (LF-1E) retained at this point. The retention of both LF-3C and LF-9C would enable a detailed exploration of the tradeoffs between partially and totally integrated siting options;

- A major disadvantage associated with LF-3C and LF-9C (from a risk perspective) pertains to transportation. The other retained siting options were considered more desirable from a transportation risk perspective. The other retained siting options were, however, considered less desirable in terms of hydrogeologic suitability. The retention of LF-3C and LF-9C would enable a more detailed exploration of the tradeoffs among the risks, impacts and costs associated with the longer haulage of untreated or partially treated special wastes and the risks, impacts and costs associated with establishing the facility components in relatively more desirable hydrogeologic settings.

On the basis of the considerations cited above, the site selection team therefore decided to retain both LF-3C and LF-9C for further consideration. At the same time it was recognized that the sites possessed potentially serious constraints which would necessitate much more detailed analysis.

16.4.7 LF-2N/PI-1N

Two Level 4 constraints were identified with the LF-2N/PI-1N siting option - hydrogeology and land use. With respect to hydrogeology LF-2N was rated at Level 4 (overall rating). The major land use constraints identified for LF-2N were high land values and proximity to residential communities. The land use constraints identified for PI-1N included a moderately large number of residences on site, the agricultural designation of the site, and the highly fragmented land ownership pattern.

The hydrogeologic analysis identified potential soil depth and consistency problems with LF-2N. However, as pointed out in Site Selection Process, Phase 3B: Selection of Candidate Sites - Physical Resources (Gartner Lee Associates Ltd., 1984b):

- the till is commonly 10 to 15 m in the area "but may be thicker in bedrock depressions such as those believed to exist beneath LF-2N";
- the wells in the vicinity of the site suggested, a range of "clay" thicknesses ranging from 10 to 34 m. Again the potential remained for adequate clay depths below LF-2N;
- many of the wells in the vicinity of the site indicated the presence of sand seams; whether this problem exists beneath LF-2N, and if so, the severity of the problem, could not be determined based on the data available;
- the Quaternary geology of the area has not been mapped in detail. It was, therefore necessary to rely on "scattered detailed references in the area, detailed work in adjoining areas and generalized regional mapping".

Thus the hydrogeologic analysis suggested the potential presence of constraints associated with LF-2N. At the same time (unlike the case with LF-3E) the possibility of suitable hydrogeologic conditions beneath LF-2N still remained. It was, therefore, concluded that the rejection of LF-2N based on potential hydrogeologic constraints would be premature.

The land use constraints associated with LF-2N/PI-1N were also considered insufficient by the site selection team to warrant site rejection, for the following reasons:

- the residential communities in the area are sufficiently well removed from LF-2N that the land use conflict (as a result of noise, visual intrusion, etc.) might well be very limited or mitigatible through design and operational procedures. A much more detailed analysis of facility layouts and operations and potential off-site effects would be necessary before the nature and severity of land use constraints could be determined;

- as costs were ranked as the least important of the site selection goals the relatively high land values associated with LF-2N were not considered sufficient to warrant site rejection; it was also recognized that the operational cost savings (as a result of shorter haul distances) might offset (at least partially) the higher land value costs;

- a more detailed analysis of potential economic impacts would be required before the issue of impacts on industrial land supply and development potential could be viewed as a decision-making consideration;

- LF-2N has a number of land use advantages including proposed industrial designation, existing industrial uses in the area, few residences on site or in the immediate vicinity of the site;

- the concern with the moderately large number of residences on site with PI-1N may well be overstated. As previously indicated, PI-1N is a larger site than will be required for facility development;

- although PI-1N is designated for agricultural purposes, as indicated in the Phase 3B Agricultural Report, the site is located in an "urban shadow". As such it is considered relatively more desirable than sites in more stable agricultural areas with longer term potential for continued agricultural use eg., LF-3C, LF-9C;

- the high degree of land fragmentation which is viewed as a land use - land value constraint is considered a positive feature from an agricultural perspective.

In addition to the conclusion that the constraints associated with LF-2N/PI-1N were insufficient to warrant site rejection the site selection team also concluded that there were many advantages associated with LF-2N/PI-1N which favoured the retention of the siting option. These advantages included:

- a favourable agricultural rating; of the retained options exceeded only by LF-1E/PI-27E;

- minimal access roads impacts to LF-2N (from Highway 401);

- a proposed industrial designation for LF-2N;

- a lower accident probability index than all other retained partially integrated siting options; with the exception of the LF-4N/PI-1N siting option;

- a favourable biological rating.

Moderate levels of surface drainage, air dispersion/air quality and heritage/ archaeological constraints were identified for the LF-2N/PI-1N siting option. Again, as indicated below, these constraints were considered insufficient by the site selection team to warrant the rejection of the siting option:

- the surface drainage analysis indicated that with PI-1N upgrading of off-site outlets might be required. The need for such improvements was not certain. The improvements, if required, were not expected to be major. The susceptibility to flooding for PI-1N was rated as minimum. As a result the surface drainage rating for PI-1N was Level 2;

- the surface drainage rating for LF-2N was Level 1;

- PI-1N received a low rating in terms of sensitive crops and livestock receptors;

- in terms of population levels, PI-1N was in the intermediate range; it was recognized that the extent to which population levels surrounding the site represented a concern would necessitate more detailed analysis in Phase 4A;

- PI-1N was also indicated as having potential topographical limitations as a result of its proximity to the Niagara Escarpment; the Phase 3B analysis however, indicated that the potential constraint with PI-1N was less severe than that associated with LF-4N (integrated); the relatively moderate level of constraint to dispersion associated with PI-1N was not considered sufficient to warrant site rejection. At the same time it was recognized that this potential constraint would have to be explored in greater detail in Phase 4A;

- the moderate archaeological/heritage rating for LF-2N/PI-1N was based on known archaeological potential and (in the case of LF-2N) known heritage resources in the vicinity of potential sites.

The known archaeological resources identified were not considered as significant as those associated with LF-11W or PI-2W. The Museum of Indian Archaeology also indicated that the potential for mitigation existed both for known and potential archaeological resources (Gartner Lee Associates Ltd. and Museum of Indian Archaeology, 1984). The archaeological constraints associated with the site were, therefore, not considered sufficient to warrant site rejection. It was however, recognized that potential archaeological impacts would need to be addressed in greater detail in subsequent stages.

The on-site heritage resources identified for LF-2N are the remains of the former village of Derry West on the northwest corner of the site. No buildings of the original village remain on the site at present. As the resources are located on one corner of the site and there are no buildings standing on the site it was concluded that the potential for mitigation remained.

The heritage resources in the vicinity of the site were considered sufficiently well removed from the site that it appeared that the potential effects on these resources were of either relatively minor severity or mitigatible.

As with the archaeological resources on-site and in the vicinity of the site, it was therefore decided that the heritage resources were insufficient to warrant site rejection. It was also, however, acknowledged that heritage resources would need to be addressed in greater detail in Phase 4A.

16.4.8 LF-1E/PI-27E

As previously indicated the constraints associated with LF-1E (integrated) were not considered by the site selection team sufficient to warrant site rejection. In addition there were a number of relative advantages which were considered to merit the continued consideration of LF-1E.

PI-27E was identified as having three major relative constraints - biology, air dispersion/air quality (population) and transportation. The Level 4 biology rating results from the intrusion of flood lines of a tributary to Lyons Creek. The Ministry of National Resources recommended use of flood lines to define the extent of important riparian habitat associated with the Lyons Creek wetland floodplain SEU. As a result, the physical resource consultants (Gartner Lee Associates Ltd.) floodline interpretations were adopted, which at the 1:10,000 scale extends across PI-27E. More detailed study during Phase 4A will indicate whether this drainage channel is worthy of SEU designation. The biological consultants, Gartner Lee Associates Ltd. indicated that they suspected that it did not contain significant wetland habitat.

PI-27E was rated as Level 4 - with respect to air quality/air dispersion (population exposure). This rating resulted from the relatively large existing population (approximately 23,000) within a five km radius of the centre of PI-27E. The transportation/utility Level 4 rating stemmed from the relatively greater haulage distances associated with the site.

Although the population levels associated with PI-27E are relatively large as compared with the retained sites, the PI-27E population level was roughly a third of that associated with PI-1A1 - the site which was rejected, in part, because of large population levels. The difference in population levels between PI-27E and PI-1N is in the order of 15,000 people.

The analysis of emissions to this point by the OWMC and its engineering consultants had resulted in an expected emission level which would be well within pertinent Provincial standards and guidelines. It was, therefore, expected that the risk to people from the OWMC facility would be minimal irrespective of location. It was, however, recognized that the relative levels of risks (although low in absolute terms) would vary from site to site. It was also recognized that there was some level of uncertainty regarding the long term health effects associated with airborne emissions. Thus, from a risk minimization perspective, the site selection team concluded that the population levels surrounding PI-27E should be considered a constraint. The site selection team also concluded that this constraint should be placed within the context of other risk and impact-related constraints and opportunities associated with the LF-1E/PI-27E siting option.

Although PI-27E was considered relatively less suitable in terms of population exposure, the site selection team recognized that the site had a number of risk-related advantages including the following:

- PI-27E received a hydrogeologic rating of 2 (overall rating);

- PI-27E received a surface drainage rating of 1 (overall rating);

- PI-27E received a sensitive agricultural rating of low constraint (lower than any other retained site in terms of sensitive crops);

- PI-27E is industrially designated and is located in an industrial area; it could, therefore, be expected that over time the number of sensitive uses (e.g., homes, community facilities) which would be established or maintained in the vicinity of the site would tend to be less than for sites not designated for industrial purposes, and may, in fact, decrease as land in the vicinity is converted to industrial use;

- PI-27E has direct access to the QEW; as a result the number of people living along local and regional access routes to the site is minimal;

- the accident probability index associated with the LF-1E/PI-27E siting option is considerably below that of LF-3C and LF-9C, lower than that of LF-1E (integrated), approximately the same as that for LF-2N/PI-13N and not substantially greater than that of LF-4N/PI-13N and LF-2N/PI-1N.

In view of the risk-related advantages associated with PI-27E, as well as the uncertainties regarding the severity of risk as expressed through regional population levels, the site selection team considered it desirable to retain PI-27E for further consideration. In this way the magnitudes and tradeoffs among various environmental pathways and receptors could be addressed in greater detail on Phase 4A.

In addition to the risk-related considerations bearing on the LF-1E/PI-27E siting option, the site selection team recognized that the LF-1E/PI-27E siting option received favourable ratings in terms of agricultural, land use and socio-economic considerations (from among the retained siting options). The issues of potential tourism and industry development impacts are to be addressed in Phase 4A.

Two other constraints identified with PI-27E were transportation and archaeological and heritage resources. With respect to archaeological resources, only a small portion of the site would be developed. There is also some flexibility in the facility layout on the site. There would, therefore, appear to be a reasonable likelihood of avoiding or mitigating potential archaeological impacts.

In terms of heritage resource constraints, as indicated in the Site Selection Process, Phase 3B: Selection of Candidate Sites - Heritage Resources Report (Gartner Lee Associates Ltd. and Museum of Indian Archaeology, 1984), although at one point historical resources existed on the site, no historical buildings "are standing in this location". It would, therefore, seem possible to avoid or minimize on-site historical resource impacts with PI-27E. With the PI operations area in the approximate centre of PI-27E it was considered possible to minimize adverse impacts on heritage resources in the site vicinity.

Site LF-1E received a medium archaeological rating. As indicated in section 16.4.5, these potential historical/archaeological impacts could be avoided.

The relatively less favourable transportation rating accorded to the LF-1E/PI-27E siting option was in comparison to the other original seventeen siting options. As previously indicated, the LF-1E/PI-27E siting option has a favourable accident probability index as compared with the retained siting options. In addition, because of its proximity to the QEW, transportation-related risks, impacts and costs along local and regional access roads associated with the LF-1E/PI-27E siting option are minimized. Finally PI-27E is in very close proximity to LF-1E. As a result the risks, impacts and costs associated with the transport of special wastes and waste residues between facility components would be minimized.

In light of the preceding comments the site selection team concluded that the LF-1E/PI-27E siting option should be retained for further consideration.

16.4.9 LF-2N/PI-13N

The major constraints associated with LF-2N and the reasons why it was concluded that LF-2N should be retained for further consideration are described in section 16.4.7.

Two major (Level 4) constraints were identified for PI-13N - biology and land use. The land use constraints identified for PI-13N pertained to the agricultural designation of the site and the residential clusters in the vicinity of and along the access routes to the site.

PI-13N has been assigned a major biological constraint because the SEU associated with Oakville (Sixteen Mile) Creek valley crosses the southeastern edge of the site. Since facilities could be developed in upland portions of the site, direct impacts on the SEU were considered avoidable by the biological consultant, Gartner Lee Associates Ltd. (1984a).

In terms of land use constraints it was recognized that although the site was designated for agricultural purposes much of the site is held in public ownership - a potential positive (for siting purposes) consideration in terms of agricultural concerns. The overall agricultural rating attached to LF-2N/ PI-13N was Level 2 - a level which was only surpassed (among the retained sites) by LF-1E/PI-27E and only equalled by LF-2N/PI-1N and LF-1E.

A further agricultural consideration pertained to the relationship of PI-13N to the nearby LF sites. PI-13N is one of only two (of the retained PI sites) which could be associated with LF-2N - an industrially designated site, which was rated highly in terms of agricultural concerns. If PI-13N was rejected and PI-1N was found to be unsuitable, the possibility of retaining LF-2N for further consideration would, in all likelihood, be lost. Thus from an agricultural perspective, there were a number of arguments favouring the continued consideration of PI-13N.

In terms of the number of residences in the vicinity of PI-13N, a preliminary consideration of potential off-site effects suggested that the facility layout and operations, together with the 400 m buffer area to be contained within the acquisition area, might well result in minimal off-site effects in terms of noise, visual intrusion, odours, fugitive emissions, etc. It was recognized that off-site impacts on residences in the vicinity of the site was a potential concern. It was, therefore, concluded by the site selection team that the rejection of PI-13N on the basis of such potential effects would be premature. It was instead decided that these concerns should be addressed in detail in Phase 4A. At that time a detailed facility layout would be prepared for the site and detailed consideration would be given to a broad range of potential off-site effects.

In addition, it was noted that the number of residences in the vicinity of PI-1N was sufficiently close to that of PI-13N and that PI-1N could not be considered a substantial improvement over PI-13N. Finally it was recognized that the public ownership of a major share of PI-13N would tend to ameliorate somewhat potential land use impacts.

In terms of potential access route impacts, PI-13N was somewhat less constrained than the two central sites LF-3C and LF-9C. It was also recognized as not being especially dissimilar from PI-1N in terms of potential access route impacts. In addition, PI-13N was potentially associated with a landfill site (LF-2N) which has minimal access route impacts (from Highway 401). Thus, in relative terms the access route impacts associated with the LF-2N/PI-13N combination were not considered sufficient to warrant site rejection.

In terms of hydrogeologic considerations LF 3N received a Level 2 rating (overall rating). This level of constraint was not considered sufficient to warrant site rejection based on the data available. The Site Selection Process, Phase 3B: Selection of Candidate Sites - Physical Resources report (Gartner Lee Associates Ltd., 1984b) does note potential problems with soil depth and consistency but concludes that further investigations of the severity of the constraint and the potential for mitigation by, for example, the placement of the operations area of the PI facility, should be undertaken before further conclusions are reached with respect to the relative or absolute suitability of the site.

In addition to the conclusion that there were insufficient negative factors associated with the LF-2N/PI-13N siting option to warrant its rejection, the site selection team also concluded that the siting option contained a number of positive attributes which warranted its retention, including the following:

- PI-13N and LF-2N both received favourable surface drainage ratings;

- PI-13N is much further removed from the Niagara Escarpment than PI-1N. Thus if the moderate air dispersion constraint associated with PI-1N turns out to be, under more detailed scrutiny, a serious problem, a PI site would remain which could be associated with either LF-4N or LF-2N;

- PI-13N was placed in the medium potential impact category with respect to sensitive crops and livestock; PI-13N has the lowest livestock density of any of the retained sites; it also has a lower sensitive crop rating than LF-3C or LF-9C;

- In terms of population in the vicinity of potential sites (population within a five km radius of the site), PI-13N was placed in the bottom category with population levels considerably less than those associated with PI-27E and PI-1N;

- PI-13N was placed in the minimum potential constraint category in terms of existing pollutant levels, topography and local population levels;

- The LF-2N option received the most favourable rating with respect to biological constraints and as noted earlier it appeared that the PI component could be established at PI-13N without adversely affecting the PI-13N biological constraint;

- As previously indicated LF-2N/PI-13N was placed in the second most favourable category with respect to potential agricultural constraints; the LF-2N/PI-13N siting options received a more favourable agricultural rating than LF-3C, LF-9C, LF-4N/PI-1N, and LF-4N/PI-13N; it also received an equivalent rating to the LF-1E siting option and was surpassed only by the LF-1E/PI-27E siting option;

- PI-13N was placed in the low constraint category in terms of heritage resources. As previously noted the potential heritage constraints associated with LF-2N appear to be mitigatible;

- The LF-2N/PI-13N siting option received an intermediate rating with respect to socio-economic considerations. It was rated more favourably than LF-3C or LF-9C;

- The LF-2N/PI-13N siting option also received an intermediate rating in terms of transportation (moderate suitability). Only the LF-4N/PI-1N, the LF-4N/PI-13N, and the LF-2N/PI-1N siting options were rated more favourably than LF-2N/ PI-13N in terms of the accident probability index.

On the basis of the considerations cited above it was, therefore, decided to retain the LF-2N/PI-13N siting option for more detailed consideration.

16.4.10 LF-4N/PI-13N

As indicated in Section 16.3.3 LF-4N (as a landfill or a landfill together with a physical/chemical treatment plant) was not considered to possess any constraints which warranted site rejection. LF-4N was also considered to possess many relative advantages which merited its further consideration.

PI-13N (section 16.4.9) was also considered to lack sufficient constraints to warrant site rejection and to possess sufficient relative advantages to merit further consideration.

It was, therefore, concluded by the site selection team that siting option LF-4N/PI-13N should be retained for further consideration.

16.5 APPLICATION OF FACTORS - SITING OPTIONS WITH LEVEL 3 OR LOWER RATINGS

16.5.1 Introduction

The one siting option which did not receive any Level 4 overall ratings is reviewed in this section. The purpose of this review is to decide whether the one siting option which appeared not to have any major constraints (based on the level of detail of analysis undertaken during initial comparative evaluation) could be selected as the preferred siting option without more detailed consideration of relative and absolute constraints.

16.5.2 LF-4N/PI-1N

The LF-4N/PI-1N siting option was the only siting option which did not receive any Level 4 constraint ratings. Thus, based on the level of investigations undertaken for candidate site identification purposes, there did not appear to be any constraints which warranted the rejection of the siting option.

Although the LF-4N/PI-1N siting option was not identified as possessing major constraints, a number of constraints were noted by the site selection team which merited further consideration. These constraints included the following:

- PI-1N was indicated as having potential topographic limitations as a result of its proximity to the Niagara Escarpment. Based on the Phase 3B analysis, this potential constraint was indicated as being less severe by the Ontario Research Foundation (1984) than that associated with LF-4N (integrated). At the same time it was recognized that the issue of the potential constraint to dispersion imposed by the Niagara Escarpment would have to be explored in greater detail;

- The LF-4N/PI-1N siting option was indicated as possessing moderate levels of constraints with respect to population levels, agriculture, archaeological/heritage resources, land use and socio-economic considerations. It was recognized by the site selection team that a more detailed exploration of these constraints, based on field investigations and interviews with local residents and businesses, could reveal further concerns which might alter conclusions regarding relative suitability;

- Although LF-4N/PI-1N are relatively close together, the two sites in combination still represent a partially integrated facility. Further analysis of the partial versus totally integrated facility options was considered necessary before firm conclusions could be reached regarding relative suitability;

- It was recognized that detailed on-site investigations, e.g. drilling, could also identify as yet unanticipated constraints which might necessitate the rejection of the siting option.

In light of the considerations noted above, it was therefore concluded by the site selection team, that there were constraints associated with the LF-4N/PI-1N siting option which warranted further consideration before a preferred siting option could be selected.

16.6 CONCLUDING COMMENTS

As indicated in Table 16.3 all but one of the retained siting options contain Level 4 constraints. After reviewing the siting options which remained, the following was concluded by the site selection team:

- none of the siting options possessed constraints which warranted rejection based on the Phase 3B analysis;
- no siting option stood out as clearly superior to the other siting options based on the data available;
- all of the siting options possess potential constraints which either alone or in combination might warrant rejection once more detailed investigations are undertaken;
- the relative advantages and disadvantages of the remaining siting options are such that the selection of a preferred siting option would involve some difficult choices and tradeoffs;
- the retained siting options provide a diversity of siting choices in terms of tradeoffs among various types and levels of potential risks, impacts and costs;
- the further exploration of relative differences among siting options would necessitate: detailed on-site investigations; interviews with local residents and tenants, community leaders, local experts, and community representatives and officials; more detailed technology, facility layout and operations inputs; a detailed analysis of the issue of potential risks to human health; and the detailed consideration of potential community and regional social and economic impacts. It was also recognized that public consultation would have to continue to play a role in detailed siting option evaluation.

Table 16.4 summarizes the major reasons why siting options are retained. The eight candidate sites which resulted from the Phase 3B analysis are indicated in Figure 16.1. Figure 16.1 also indicates the potential facility arrangements associated with each site.

Figure 16.1 lists LF-3C and LF-9C as potentially suitable for a landfill alone, or a landfill with a physical/chemical treatment plant. In terms of facility arrangement options LF-3C and LF-9C have and will continue to be considered principally as fully integrated facility options in Phase 4A.

No suitable PI sites have been identified in the vicinity of LF-3C and LF-9C and no major constraints were identified by the site selection consultants in Phase 3B which warranted the consideration of a partially integrated facility arrangement for the two sites.

In the event that major constraints are identified with respect to either LF-3C or LF-9C (which make it undesirable to establish either an incinerator or a physical/chemical treatment plant at one or both of the sites), the site selection team recognized that previously rejected PI sites, site areas and areas would need to be reconsidered.

TABLE 16.4

Initial Comparative Evaluation - Major Reasons for Retention

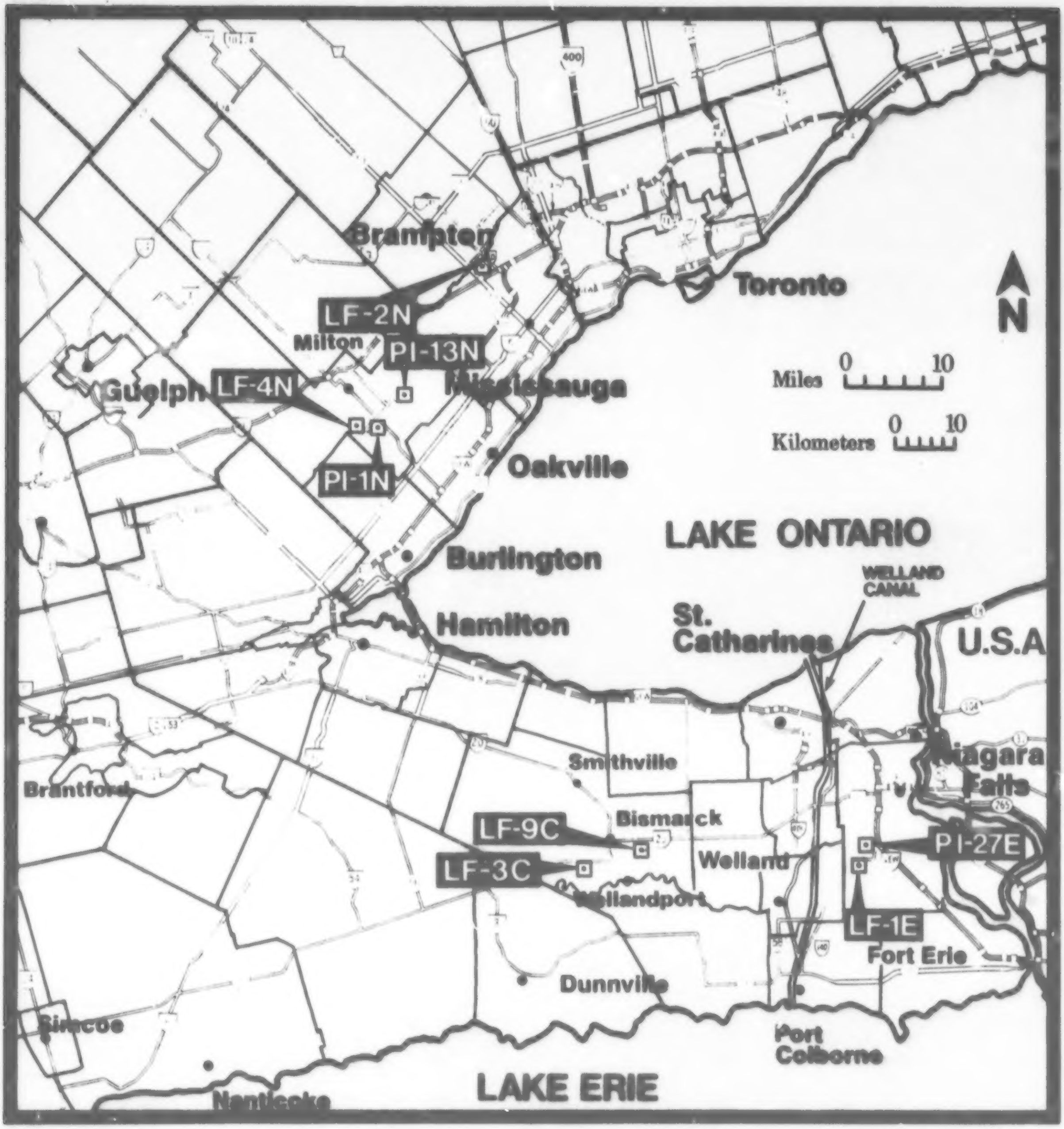
Fully Integrated Options	Reasons for Retention
LF-9C and LF-3C	° hydrogeology ° air dispersion/air quality/ population levels ° insufficient information on constraints to warrant rejection
LF-1E	° close proximity to QEW ° urban shadow ° insufficient information on constraints to warrant rejection
Partially Integrated Options	
LF-2N/PI-13N	° LF-2N - proposed industrial designation ° PI-13N - largely publicly owned ° regional transportation access ° proximity of facility components ° insufficient information on constraints to warrant rejection
LF-2N/PI-1N	° LF-2N - proposed industrial designation PI-1N - urban shadow ° regional transportation access ° proximity of facility components ° insufficient information on constraints to warrant rejection
LF-4N/PI-1N	° PI-1N - urban shadow ° hydrogeology ° proximity of facility components ° regional transportation access ° insufficient information on constraints to warrant rejection

TABLE 16.4 (Cont'd)

Initial Comparative Evaluation - Major Reasons for Retention

Siting Options	Reasons for Retention
LF-1E/PI-27E	° LF-1E urban shadow/PI-27E proposed industrially designated ° immediate access from PI-27E to QEW ° proximity of facility components ° hydrogeology ° insufficient information on constraints to warrant rejection
LF-4N/PI-13N	° PI-13N - further removed (than PI-1N) from Niagara Escarpment ° LF-4N - hydrogeology ° regional access ° proximity of facility components ° insufficient information on constraints to warrant rejection

Figure 16.1 Candidate Sites CANDIDATE SITE IDENTIFICATION


Brampton
Toronto
N
LF-2N
Milton
PI-13N
Mississauga
Guelph
LF-4N
Miles 0 10
Kilometers 0 10
PI-1N
Oakville
LAKE ONTARIO
Burlington
WELLAND CANAL
Hamilton
St. Catharines
U.S.A
Smithville
Niagara Falls
Brantford
Bismarck
LF-9C
PI-27E
Welland
LF-3C
Wellandport
LF-1E
Fort Erie
Dunnville
Simcoe
Port Colborne
LAKE ERIE
Nanticoke
400

Legend

▣ Candidate Site

Regional Municipal & County Boundaries

___ Township, Town & City Boundaries

LF Landfill

PI Physical/Chemical Treatment Plant & Incineration

Source: Ontario Waste Management Corporation. March, 1984.
Note: Symbols indicate location only, and not size or shape of sites.

Site Name	Landfill	Physical/ Chemical	Incinerator	
LF-2N	●	●		
LF-4N	●	●	●	Integrated
PI-1N		●	●	
PI-13N		●	●	
LF-3C	●	●	●	Integrated
LF-9C	●	●	●	Integrated
LF-IE	●	●	●	Integrated
PI-27E		●	●	

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VOLUME 3

Candidate Site Identification

APPENDIX G

TABLE G-1

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
Site - "Pathways" into the Environment		
° To site facility components in hydrogeologic settings that will restrict naturally the movement of contaminants and protect ground water resources and to utilize engineering measures where required to ensure maximum environmental safety	° regional category ° thickness of confining layer ° geologic predictability ° material texture ° oil and gas wells ° surface drainage	° second level of protection concern ° refinement of previously collected data ° suitable for mapping 1:10,000 ° major public concern ° relates to risk ° engineering measures not addressed
° To site facility components in hydrogeologic settings that will restrict naturally the movement of contaminants and protect human health, surface water resources, and aquatic ecosystems	° regional category ° thickness of confining layer ° geologic predictability ° material texture ° oil and gas wells ° surface drainage	° second level of protection concern ° risk-related ° refinement of previously collected data ° suitable for mapping 1:10,000 ° major public concern
° To site facility components in airsheds that have atmospheric dispersion characteristics which will protect air quality and aquatic and terrestrial ecosystems	° existing pollutant levels ° topography	° suitable for overview comparative analysis ° second level of protection concern ° risk related ° major public concern

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
° To site facility components in settings that minimize the hazards to the site as a result of such conditions as flooding, potential susceptibility to seismic disturbance, and slope failures and to utilize engineering measures where required to ensure maximum environmental safety	° surface drainage ° topography	° refinement of terrain analysis ° second level of protection ° excludes consideration of engineering measures ° major public concern ° risk-related
° To site facility components in settings that facilitate environmental monitoring as well as the application of countermeasures including back-up emergency measures	° regional category ° thickness of confining layer ° geologic predictability ° material texture ° oil and gas wells ° surface drainage	° second level of protection concern ° risk-related ° excludes detailed consideration of countermeasures ° refinement of previous analysis
° To site facility components to minimize potential contamination of food chains in the environment	° sensitive crops and livestock density	° second level of protection concern ° risk-related ° comparative issue ° major public concern ° excludes direct treatment of human health issue

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
° To site facility components to minimize hazards to the site from other uses which might contribute to the likelihood of severity of a release of contaminants	° existing commercial and industrial uses	° second level of protection concern ° based on roadside field investigations and reviews of secondary source materials ° excludes details of operations which could only be determined based on business interviews
Site-Human Exposure		
° To site facility components to minimize the number of people who might be exposed, as well as the duration of their exposure to contaminants in the event of a release	° existing residents ° future residents ° existing community and recreation features ° population levels	° second level of protection concern ° refinement of previous analysis ° comparative issue ° risk-related ° major public concern
° To site facility components to minimize the potential for the contamination of existing wells and other sources of water for human or animal consumption	° ground water resources - aquifer ° surface drainage	° second level of protection ° consideration of aquifer quality and use ° water well analysis based on MOE records; excludes detailed analysis of well logs, interviews with residents and local experts ° major public concern ° comparative issue ° refinement of previous analysis

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
° To site facility components to minimize the potential for exposure of populations who are sensitive to exposure and/or are difficult to evacuate	° existing residents ° existing community and recreation features ° population levels	° second level of protection ° refinement of previous analysis ° addresses major institutions and residents ° excludes detailed demographic analysis or profile of institutional users ° major public concern ° comparative issue
Transportation and Discharge: "Pathways" into the Environment		
° To select transportation routes and modes which minimize the likelihood of a release of contaminant during transit	° transportation safety (proximity to arterial road, difficulty of access, transportation accident frequency index, proximity to freeways)	° second level of protection ° risk-related ° comparative issue ° refinement of previous analysis ° major public concern
° To site facility components so that the physical settings along the access roads to the site(s) naturally restrict the movement of contaminants and protect human health, terrestrial and aquatic ecosystems	° length of sensitive lands crossed (m) ° number of stream crossings	° second level of protection ° suitable for comparative analysis ° refinement of previous analysis

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
Transportation and Discharge - Exposure		
° To site facility components to minimize the number of people who might be exposed and the duration of that exposure to contaminants along access routes to the site(s) in the event of a release.	° local access roads - existing residents, existing community and recreation features, future residents ° regional access roads existing residents, existing community and recreation features	° suitable for roadside field investigations and secondary source analysis ° major public concern ° suitable for comparative analysis ° second level of protection ° risk-related ° excludes consideration of duration of exposure
° To site facility components to minimize the potential for exposure of populations who are sensitive to exposure and/or are difficult to evacuate along access routes to the site(s)	° local access roads - existing residents, existing community and recreation features, future residents regional access roads - existing residents, existing community and recreation features	° suitable for roadside field investigations and secondary source analysis ° second level of protection concern ° addresses major institutions and residents ° excludes detailed demographic analysis or profile of institutional users ° major public concern ° suitable for comparative analysis
Physical and Biological		
° To avoid destruction and minimize disruption of significant natural ecosystems	° SEUs ° non-SEU woodlots >20 ha ° other vegetation ° terrestrial wildlife habitat ° aquatic habitat ° local setting	° suitable for roadside field investigations and refinement of previous analysis ° public concern

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
		° excludes on-site investigations ° suitable for comparative analysis
° To avoid destruction and minimize disruption of significant vegetation or wildlife populations	° SEUs ° non-SEU woodlots >20 ha ° other vegetation ° terrestrial wildlife habitat ° aquatic habitat ° local setting	° suitable for roadside field investigations and refinement of previous analysis ° excludes on-site investigations ° public concern ° suitable for comparative analysis
° To avoid destruction and minimize disruption of rare or uncommon species of plant and animal life	° SEUs ° non-SEU woodlots >20 ha ° other vegetation ° terrestrial wildlife habitat ° aquatic habitat ° local setting	° indirectly addressed through SEU analysis ° refinement of previous analysis ° excludes on-site investigations ° public concern ° suitable for comparative analysis
° To avoid destruction and minimize disruption to significant landforms and other physical features	° SEUs	° suitable for air photo interpretation, secondary source analysis and roadside field investigation ° suitable for comparative analysis ° excludes on-site investigations

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
Resources		
° To minimize the amount of land required to safely construct and operate the facility component(s)	° land fragmentation ° site size and configuration	° minimizes displacement of resources ° included through use of ownership data for boundary definition purposes ° suitable for secondary source analysis ° cost-related
° To minimize displacement of prime agricultural soils	° soil capability	° minimizes displacement of resources ° major public concern ° suitable for refinement of previous data ° suitable for comparative analysis ° excludes on-site investigations
° To minimize displacement and disruption of existing farm enterprises	° farm building complexes ° cultivated land ° sensitive crops ° livestock populations	° suitable for roadside field investigations ° suitable for comparative analysis ° public concern ° suitable for mapping at 1:10000 ° minimizes agricultural impacts ° excludes information from interviews with owners and operators

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
° To minimize disruption to productive agricultural areas and to agricultural communities	° land use designations (rural/agricultural) ° land use pattern ° social and economic pattern ° urban shadow	° minimizes agricultural impacts ° public concern ° suitable for comparative analysis ° overview analysis - excludes detailed analysis based on statistical analysis and interviews
° To minimize displacement and disruption to other natural resource uses such as mineral aggregates	° existing resources ° existing commercial and industrial uses	° considered in terrain analysis ° minimizes resource impacts ° suitable for air photo interpretation, secondary source analysis and roadside field investigations ° excludes on-site investigations and interviews ° suitable for comparative analysis
° To minimize displacement of and disruption to heritage and archaeological resources	° historical and archaeological resources	° minimizes resource impacts ° suitable for secondary source analysis and agency checks ° suitable for air photo interpretation (archaeological potential) and roadside investigations (heritage resources) ° excludes on-site investigations and interviews ° suitable for comparative analysis

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
° To minimize displacement of areas with a high potential for resource development	° soil capability	° minimize resource impacts addressed in terrain analysis ° public concern ° refinement of previous analysis ° suitable for roadside field investigations ° excludes on-site investigations and interviews ° suitable for comparative analysis
Land Uses and Land Ownership		
° To minimize conflict with existing, committed, proposed and planned land uses	° existing residents ° existing resources ° existing community and recreation features ° existing commercial and industrial uses ° future resources ° future commercial and industrial uses ° future residential uses	° suitable for refinement of previous analysis and roadside field investigations ° minimizes land use impact ° public concern ° suitable for comparative analysis
° To maximize the potential for the establishment of the facility components in locations characterized by similar industrial uses	° existing commercial and industrial uses	° minimizes land use impacts ° public concern ° suitable for refinement of previous analysis and roadside field investigations ° suitable for comparative analysis ° excludes interviews with business

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
° To minimize the amount of private property required and the disruption to land ownership patterns	° land ownership (public) ° land fragmentation ° site size and configuration	° minimizes land ownership disruption ° public concern ° suitable for more detailed analysis of secondary source data ° suitable for comparative analysis ° excludes direct contact with owners
° To minimize conflict with Federal, Provincial, Municipal and native communities, policies, programs and plans	° future residents ° future resources ° future commercial and industrial uses ° SEUs	° minimizes community impacts ° suitable for refinement of previous data, and future secondary source data ° suitable for comparative analysis
Social		
° To minimize the displacement of people, particularly those groups and individuals vulnerable to change	° existing residents ° existing community and recreation features ° future residents	° minimizes social and economic impacts ° suitable for refinement of previous data and roadside field investigations ° excludes detailed analysis of population characteristics facility uses or data based on interviews with residents or institutions ° suitable for comparative analysis

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
• To minimize losses or impacts on buildings and features of archaeological, historic, symbolic, cultural or social significance	• historical and archaeological resources • existing community and recreation features	• minimizes social impacts • suitable for secondary source analysis • refinement of previous data on roadside field investigations • suitable for comparative analysis • excludes on-site investigations and interviews
• To maximize compatibility between the facility components and the character, image, traditions and lifestyle of the affected area.	• existing community character	• minimizes social impacts • suitable for comparative analysis • overview analysis • excludes detailed data analysis and interviews
• To minimize conflict between the transportation of hazardous wastes to the facility components and the use and enjoyment of properties along access routes to the site(s)	• access roads-local-existing residents, resources, community and recreation features, future residents, resources • access roads-regional-existing residents, resources, community and recreation features	• minimizes social and economic impact • suitable for comparative analysis • addressed indirectly - land uses along routes

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
• To minimize conflict between facility-related traffic and local traffic by ensuring that access routes provide an acceptable level of service.	• access road-local and regional transportation safety	• minimizes social and economic impacts • suitable for comparative analysis • overview analysis - analysis based on road type and length rather than detailed link by link analysis • refinement of previously collected data
• To minimize the displacement of businesses	• existing/commercial and industrial uses	• minimizes economic impacts • suitable for roadside field investigations • suitable for comparative analysis • excludes interviews with businesses
• To maximize compatibility with the local and regional economic character of the affected area	• existing community character • future residents	• minimizes economic impacts • suitable for comparative analysis • overview analysis • excludes detailed data analysis and interview
• To minimize adverse effects upon the provision and use of public and private community services and features	• existing community and recreation features	• minimizes municipal financial impacts • suitable for comparative analysis • addressed indirectly displacement of and proximity to features • excludes detailed financial analysis and interviews

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
Financial		
• To minimize capital and operating costs to the greatest extent possible without sacrificing environmental quality	• tonne kilometres of waste and solidification agents hauled	• minimizes financial costs • includes major cost considerations • indirectly risk-related • suitable for comparative analysis
• To minimize site acquisition costs	• land value • land fragmentation • land ownership	• minimizes financial costs • includes preliminary property estimates • incorporated into overall cost analysis • excludes detailed appraisals
• To minimize on-site development costs, eg. clearing, drainage, grading, screening and other engineering modifications	• site improvement costs	• minimizes financial cost • identifies major constraints • excludes detailed cost analysis • suitable for comparative evaluation purposes
• To minimize off-site development costs eg. service extensions, road improvements	• utilities, road improvement cost, proximity to rail access	• minimizes financial costs • suitable for comparative analysis • limited to overview of road improvements

TABLE G-1 (Cont'd)

Relationship of Objectives to Candidate Site Identification Factors

Objectives	Related Factors	Reasons for Consideration/ Comments
• To minimize development and/or operation costs associated with the construction and operations of the facility component(s) eg. duplicate facilities	• tonne kilometres of waste and solidification agents hauled	• minimizes financial cost • incorporated into overall cost analysis • included in overall cost analysis • includes major cost considerations • suitable for comparative evaluation purposes
• To minimize transportation operations costs associated with hauling hazardous wastes to and among facility components	• tonne kilometres of waste and solidification agents hauled • proximity to rail access (to PI sites)	• minimizes financial costs • incorporated into overall cost analysis • suitable for comparatives analysis • includes major cost consideration

TABLE G-2

Initial Comparative Evaluation

Identification of Objectives Not Considered

Objectives Not Addressed In Initial Comparative Evaluation	Doesn't Assist in Determining Site Acceptability	Needs Engineering Analysis	Needs Intensive Community Dialogue	Needs On-Site Field Investigations	Potential for Mitigation	Previously Addressed	COMMENTS
Minimize Risk to Human Health							
Site "Pathways" into Environment							
• To locate discharge locations (if required) with dispersion characteristics that will protect human health, surface water resources and aquatic ecosystems.		0		0		0	• previously checked in general terms; difference is largely one of costs; requires detailed analysis of corridor options
Minimize Environmental Impact							
Physical and Biological							
• To minimize physical impacts on surface water such as sedimentation and changes in base flow.	0	0		0	0		• requires detailed engineering site investigations; potentially mitigatible; differences likely to be subtle
• To minimize impacts on surface water quality from emissions.	0	0		0	0		• all sites removed from major water bodies; subtle differences; would require detailed site analysis and possible monitoring

TABLE G-2 (cont'd)

Initial Comparative Evaluation

Identification of Objectives Not Considered

Objectives Not Addressed In Initial Comparative Evaluation	Doesn't Assist in Determining Site Acceptability	Needs Engineering Analysis	Needs Intensive Community Dialogue	Needs On-Site Field Investigations	Potential for Mitigation	Previously Addressed	COMMENTS
Resources							
• To minimize disruption of economically and/or recreationally important biological resources.			0	0			• requires detailed site analysis and discussion with owners
Social							
• To minimize conflict between the facility components, operations and the use and enjoyment of properties in the vicinity of the site(s), as a result of visual intrusion, noise, etc.		0	0	0	0		• requires detailed site analysis; addressed indirectly - site size requirements and abutting uses
• To establish the facility components, to the extent possible, in areas in which the local communities can adapt to the type of changes which might result from the project.			0		0		• requires detailed community analysis and consultation; differences may be subtle
• To maximize community acceptance of the facility components	0	0	0		0		• requires detailed community analysis and consultation; may not vary by location
• To maximize compatibility with the visual character and appearance of the landscape in the vicinity of the facility components.		0	0	0	0		• requires detailed field investigations; potentially mitigatible; addressed indirectly through land use

TABLE G-2 (cont'd)

Initial Comparative Evaluation

Identification of Objectives Not Considered

Objectives Not Addressed In Initial Comparative Evaluation	Doesn't Assist in Determining Site Acceptability	Needs Engineering Analysis	Needs Intensive Community Dialogue	Needs On-Site Field Investigations	Potential for Mitigation	Previously Addressed	COMMENTS
Economics							
• To maximize local employment opportunities.	0	0	0				• doesn't assist in determining site acceptability; potentially marginal variation among sites
• To minimize property value depreciation.	0	0			0		• requires detailed site specific analysis and consultation; potentially mitigatible
• To minimize disruption to the operations of local businesses	0		0	0	0		• requires detailed site investigation and consultation with businesses
• To minimize the burden on municipal services and finance.	0	0	0	0	0		• requires detailed site investigations and community consultation; potentially mitigatible

TABLE G-2 (cont'd)

Initial Comparative Evaluation

Identification of Objectives Not Considered

Objectives Not Addressed In Initial Comparative Evaluation	Doesn't Assist in Determining Site Acceptability	Needs Engineering Analysis	Needs Intensive Community Dialogue	Needs On-Site Field Investigations	Potential for Mitigation	Previously Addressed	COMMENTS
Minimize Financial Costs							
To Recover Capital and Operating Costs to the Maximum Extent Possible Without Sacrificing Environmental Quality							
° To minimize approvals costs.	0		0				° difficult to predict; may not vary substantially among locations; requires detailed community dialogue
° To minimize development and/or operations costs necessitated by site or area characteristics, e.g. special remedial or monitoring measures to protect human health and the environment.	0	0		0			° requires site analysis; not likely to be constraint
° To minimize on and off-site development and/or operations costs associated with effluent dispersions, e.g. pipelines.	0	0		0	0	0	° would require detailed site analysis

TABLE G-3

Role of Facility Characteristics in Candidate Site Identification

Facility Characteristics	Role in Candidate Site Identification
° waste distribution	° assumptions regarding waste quantities, (150,000 tonnes/annum by type, waste and additive sources, additive quantities (7,700 tonnes/annum), process type (cement only), quantities of treated effluents to be transferred to the landfill (124,200 tonnes/annum) and transportation mode (truck transport) employed in the transportation analysis ° recognition of the potential risks, impacts and costs associated with the haulage of special wastes and treated effluents led to the consideration of residents, resources, community and recreation features, commercial and industrial uses along access roads to the sites. It also led to the consideration of pathways, eg. hydrogeologically sensitive lands, stream crossings by which the special wastes might enter the environment in the event of an accidental release
° technical buffer zone	° the operations area of the physical/chemical treatment plant incinerator (in the case of separate PIs and fully-integrated sites) was established within the site area such that a 400 m buffer, from the area containing the potential sources of gaseous emissions under upset conditions, could be established within the acquisition area
° nature of special wastes, remote possibility of release	° related to the degree to which different physical environmental conditions, eg. confining layer thickness would inhibit

TABLE G-3

Role of Facility Characteristics in Candidate Site Identification

Facility Characteristics	Role in Candidate Site Identification
or effects from long-term exposure	the migration of contaminants and to human exposure in the event of a release; for planning purposes preference for 20 m or greater of silt-clay soils for landfill or integrated facilities (a minimum of 10 m with consideration being given first to areas with greater than 20 m of consistency silt-clay soils); preference for approximately 10 m or greater of silt-clay soils for physical/chemical treatment and incinerator facilities • a 1000 m study area determined to be sufficient for the comparative analysis of receptors which might be affected by fugitive emissions • air dispersion analysis and the analysis of potential conflicts with the operations of major airports also based on the assumption of a maximum stack height of 100 m • five kilometre study area established for the collection of existing air quality data, local constraints to air dispersion data, and sensitive receptor information (sensitive crops and livestock, populated areas); the maximum point of impingement for stack emissions would be within the five km study area with a stack height not greater than 100 m
• industrial nature of the facility components	• a 1000 m study area was established around the emissions area for the PI sites; the 1000 m study area represents the maximum separation distance recommended by the Ministry of the Environment, between heavy industrial uses and sensitive uses, eg. residential

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[1] A more detailed description of the role of facilities characteristics in Phase 3B is contained in Volume 1. A more detailed technical description of the rationale for the assumptions employed in the M.M. Dillion Limited report Site Selection Process, Phase 3B: Selection of Canadidate Sites - Facilities Characteristics and Technical Buffer Zones, 1984a and on the OWMC Facilities Development Process Phase 3 Report, March, 1984a and b.

TABLE G-3

Role of Facility Characteristics in Candidate Site Identification

Facility Characteristics	Role in Candidate Site Identification
	area; the general MOE guidelines for heavy industrial uses is greater than 300 m with case by case interpretations
	° a 500 m study area was established around the landfill (in the case of integrated and landfill sites only); 500 m is the maximum separation distance recommended by the Ministry of the Environment between sanitary landfills and sensitive uses; this standard is based upon a concern with the potential for methane gas migration; landfill gas is a significant concern with the decomposition of garbage, which is mainly organic, but not with solidified inorganic wastes
	° industrial nature of the facility components led to a review of the degree of compatibility between the facility components and agricultural uses, natural environmental features, community and recreation features and various land uses, utilities and transportation facilities
	° large land requirements associated with the facility components led to the consideration of land acquisition costs, land ownership (public versus private) and land fragmentation. Land ownership patterns were also a consideration in the determination of site boundaries
	° led to the siting process being structured to maximize the potential for retaining industrial or potential industrial locations
° potential of displacement of uses and features within the site	° the desire to minimize the displacement of uses and features within the site led to the consideration of natural environmental resources, agricultural capability, land use and ownership patterns, existing, future and planned residential, commercial and industrial land uses, historical and archaeological resources, community and recreation features

TABLE G-3

Role of Facility Characteristics in Candidate Site Identification

Facility Characteristics	Role in Candidate Site Identification
• facility arrangements	• for purposes of comparative analysis, the following facility arrangements were considered - fully integrated, incinerator and physical/chemical facility at one site and landfill at separate site
• total solidification	• initial comparative analysis was based on the assumption of total solidification

TABLE G-4

Role of Site Selection Principles in Candidate Site Identification

PRINCIPLES	FACTOR IDENTIFICATION	FACTOR RANKING	FACTOR APPLICATION	ROLE IN PHASE 3B SITE SELECTION
Progressive Refinement of the Search Process	0	0	0	° wider study area around each site area considered than during potential site identification also consideration of local and regional access routes and broader range of risk, impact and cost considerations
	0			° additional investigations included considerations which involved refinements and elaborations of existing available data; could be determined through roadside field investigations in the vicinity of sites and along access roads to sites; could be readily used to characterize broad community and regional patterns and which could facilitate a comparative evaluation of siting options rather than a detailed analysis of absolute impacts
	0			° siting matters which could have necessitated on-site investigations, community contacts and detailed interpretations and modelling not addressed in candidate site identification
			0	° sites only rejected if major limitation unlikely to be overcome and/or site clearly relatively less desirable than the retained siting option
Definition of the Environment	0			° factors encompass range of hydrogeologic, hydrologic, natural environment, heritage and agricultural resource, land use, land ownership, community and recreation features, social and economic, transportation and utility and cost considerations
		0		° factors received low ranking if positive factor in minimizing adverse environmental impacts, if minor constraint or if it can be readily mitigated
		0		° factors received high ranking if major potential environmental impacts

TABLE G-4

Role of Site Selection Principles in Candidate Site Identification

PRINCIPLES	FACTOR IDENTIFICATION	FACTOR RANKING	FACTOR APPLICATION	ROLE IN PHASE 3B SITE SELECTION
Protection of Human Health and the Environment	0			° factors pertaining to the ability of the hydrogeologic environment to inhibit the movement of contaminants, e.g. natural containment potential
	0			° factors pertaining to potential hazards to the site area, e.g. surface drainage
	0			° factors pertaining to air dispersion/quality considerations, e.g. existing pollutant levels, topography
	0			° factors pertaining to human exposure in the event of an accidental release, e.g. population density, existing and future residents, existing community and recreation features
	0			° factors pertaining to the food chain, e.g. sensitive crops, livestock populations
		0		° factor received low ranking, i.e., low constraint if positive factor in providing a second level of environmental protection
		0		° factor received high ranking if relatively greater risks
The Involvement of Those Affected	0			° general public concerns with transportation risk, potential ground water contamination, agricultural resources, land use compatability, land ownership, human health, potential for surface water contamination, wildlife and environmentally significant areas addressed by factors
	0			° general public concern with social, community and agricultural community addressed in broad terms; a detailed examination of such concerns would have necessitated detailed discussions with local communities

TABLE G-4

Role of Site Selection Principles in Candidate Site Identification

PRINCIPLES	FACTOR IDENTIFICATION	FACTOR RANKING	FACTOR APPLICATION	ROLE IN PHASE 3B SITE SELECTION
The Involvement of Those Affected (continued)	0			° general public concerns with traffic hazards, noise, odour addressed in general terms by access road and site vicinity factors; a more detailed treatment of such concerns would have required conceptual facility layouts as well as air dispersion and noise modelling; these types of analyses were felt to be more appropriate for the detailed comparative evaluation of sites
	0			° concern with stress, disruption of community facilities and ability to cope with potential impacts on community lifestyle not addressed; would have required detailed community discussions; these types of analyses considered to be more appropriate for the detailed comparative evaluation of sites
		0	0	° emphasis on human health and environmental considerations taking precedence over cost-related factors reflected in the ranking and application choice of risk-related factors
	0			° in terms of the Fall 1983 workshop responses - participants' concerns with ground and surface water contamination, land use compatability and agricultural resources and natural features reflected in factors
			0	° factors which continued to be treated as exclusionary during initial comparative evaluation despite a division of opinion by workshop participants included drumlin (Niagara), drumlin field and moraine for incinerator siting. These features were considered unsuitable as they fail to provide a second level of protection
			0	° factors which continued to be treated as non-exclusionary despite a contrary position from workshop participants included: some agricultural lands in agricultural capability classes 1, 2, 3 and 4 (reflected differences in agricultural

TABLE G-4

Role of Site Selection Principles in Candidate Site Identification

PRINCIPLES	FACTOR IDENTIFICATION	FACTOR RANKING	FACTOR APPLICATION	ROLE IN PHASE 3B SITE SELECTION
The Involvement of Those Affected (continued)	0			use and potential and higher priority attached to maintaining a range of sites with highly suitable hydrogeologic and transportation conditions; drumlins-Halton (provides second level of protection); poor surface drainage (potentially mitigatible) non-SEU woodlots greater than 20 ha (insufficient data for decision-making); rural designated (necessary to maintain a diversity of siting options and addressed by agricultural resources); industrially designated and built upon (potential for retention or relocation of small industrial uses); local community and recreation features (potential for retention or relocation)
	0	0	0	° OWMC January 1984 workshop responses contributed to: the consideration of both local areas of environmental significance and areas with relatively low intensity agricultural production; the emphasis on retaining sites with both limited haulage distances and deep consistent silt clay soil; the further consideration of the differences in suitability of sites in urban fringe and urban shadow locations as against sites in stable agricultural areas; the further consideration of the differences in suitability of sites in urban shadow locations with higher levels of agricultural capability/productivity as against sites in stable agricultural areas with lower levels of agricultural capability/productivity; the further consideration of the tradeoffs among agricultural capability/productivity, the depth of silt clay soils and transportation access; the reinforcement of the desirability of industrial locations
	0			° additional issues and concerns raised during the workshops and reflected in candidate site identification-heritage areas, rural residential areas, airports, health facilities, air dispersion/air quality, separation distances from sensitive uses

TABLE G-4

Role of Site Selection Principles in Candidate Site Identification

PRINCIPLES	FACTOR IDENTIFICATION	FACTOR RANKING	FACTOR APPLICATION	ROLE IN PHASE 3B SITE SELECTION
Efficiency and Effectiveness of the Process	0			• led to decision to focus resources on: major potential risks, impacts and costs; factors which were likely to reflect major relative differences among siting options; factors which reflected major public concerns; and factors which could be addressed through secondary source analyses, roadside field investigations, air photo interpretation and agency contacts
	0			• factors which would have necessitated: a detailed evaluation of subtle differences; detailed engineering analyses and modelling; detailed interviews with residents, owners, businesses and community leaders and representatives; on-site field investigations; or were considered potentially mitigatible were considered more appropriate for consideration during the detailed comparative evaluation stage
A Second Level of Protection of the Environment	0	0	0	• a consideration in the selection and application of the physical factors; particular emphasis placed on hydrogeologic and surface drainage settings which would tend to inhibit the migration of contaminants in the vicinity of sites as well as along access routes to the sites
	0	0	0	• a consideration in transportation safety, air quality and receptor factors
Likelihood of Suitability			0	• where there was a strong likelihood that potential sites would not be suitable and very detailed investigations, e.g. extensive drilling, would have been required to ascertain suitability, such sites were considered unsuitable

TABLE G-4

Role of Site Selection Principles in Candidate Site Identification

PRINCIPLES	FACTOR IDENTIFICATION	FACTOR RANKING	FACTOR APPLICATION	ROLE IN PHASE 3B SITE SELECTION
The Maintenance of Choice			0	• where further investigations, particularly through on-site investigations and interviews with local residents and communities, could fairly readily confirm the severity of constraints associated with some factors, sites affected by such features were retained for further consideration
			0	• examples of both sides of critical tradeoffs e.g. transportation risk or minor ground water contamination constraints, urban shadow vs rural locations were retained for further consideration
			0	• sites which were characterized by constraints determined to be insufficient for decision- making purposes were retained for futher consideration
			0	• effort made to retain a diversity of siting choices for those siting considerations which were not addressed in detail in candidate site identification

TABLE G-5

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
1. Factors on Site	
1.1 HUMAN ENVIRONMENT	
1.1.1 Existing Residents	
i) Number of People Displaced (Estimated Population)	
This indicator is an estimate of the number of people who reside within the bounds of a designated candidate site and who would be required to move if a facility were located there.	Those sites where few people would be displaced were seen as more desirable than sites where many people would be displaced.
ii) Number of Residences Displaced	
The number of residences displaced is the number of housing units, both farm and non-farm related which would be displaced by a facility.	Number of residences displaced is the most easily measured indicator of the amount of personal dislocation to be anticipated in the selection of any site.
1.1.2 Existing Resources	
i) Number of Farm Building Complexes - Average and Above Average	
Farm infrastructure refers to the complex of farm buildings, i.e. barns, storage sheds, silos, grain bins, manure storage, etc. The total number of farm buildings rated average and above average were totalled for each site alternative.	The nature, size and condition of farm building complexes is indicative of the relative value of existing farm infrastructure that would be impacted through acquisition of all, or parts of farm units.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	Impacts will generally be greater in areas with a higher infrastructure investment.
ii) Cultivated Land (ha)	
This indicator measures the amount of land within the site area which is cultivated for crop production.	The indicator helps to differentiate between sites which may be of similar soil capability but which may have a high degree of present utilization versus a high proportion of idle or forested land. Impacts are potentially higher for sites with a high proportion of land that is in use for agricultural production.
iii) Urban Shadow	
This indicator measures the number of land holdings within the site acquisition area which are less than 20 ha in size and the number of non-farm residences.	The number of land holdings less than 20 ha. serves as a general indicator of the degree of fragmentation of land parcels into small ownership which increase the difficulty of maintaining land in long-term commercial agricultural production. The potential effects on the agricultural resource base of a facility siting will be higher in an area where agriculture is the predominant use. In those areas where there has been a relatively high level of non-agricultural intrusions, the potential impacts on agriculture would generally be less.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
iv) Historical Resources	
These include sites and buildings of historical significance such as houses, farms, mills, factories, stores and shops as identified by historic plaque signs and preliminary field investigations. Only buildings constructed prior to 1900 were identified. It is also possible that some heritage features might not have been recognized as being of historical to structural changes.	The number and significance of historical resources with potential significance were noted. Since such resources are a reflection of the past culture and character of an area, sites with no historical resources or sites where historical resources could be relocated were viewed as more desirable.
v) Archaeological Resource Potential	
The number and significance of native (pre-1650) archaeological sites and Euro-Canadian (pre-1867; non-standing) historic sites were noted in the analysis of archaeological resources. Areas of high archaeological potential were also identified.	It is important to identify significant archaeological sites so that they might be avoided. The identification of areas with high archaeological potential "flag" areas where archaeological sites might be discovered during a detailed field investigation.
vi) Aquifer (Ground Water Resources)	
Aquifers are geologic units or formations which are sufficiently porous and permeable to supply ground water at a continuous rate.	The presence of an aquifer should not necessarily be considered to be a constraint to facility siting. While lands underlain by major aquifers could be given a lower priority for facility siting, particularly where other equally suitable lands are present that are not underlain

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	by such aquifers, it should be noted that even a marginal aquifer can represent a sole source of water for individuals in a specific area. The potential for aquifer contamination is dependent on a larger number of interrelated factors (e.g. local ground water movement patterns and velocity, ambient ground water quality and existing and potential water use). All of these factors will be assessed on a site specific basis. Only the presence/absence of aquifers can be considered during the initial comparative evaluation.
1.1.3 Existing Community and Recreation Features	
i) Public Community Features	
Those features under public jurisdiction and which provide educational, health and safety, correctional and government services to a municipality are included in this category. Examples include schools, police and fire stations.	These features may contain temporary or residential populations, some incapacitated, and are generally not compatible with the industrial nature of OWMC facilities. In many cases these features would be difficult to relocate.
ii) Public Recreation Features	
This indicator includes those features under public jurisdiction which provide recreation and leisure opportunities for residents. Features such as parks, fairgrounds, museums, community and cultural centres were considered in this category.	These features involve a large number of temporary users or in some cases tourists. The potential for loss of recreation opportunities, disruption to the use of the features or the loss of revenue are undesirable. Such features would not generally

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	be considered compatible with industrial uses.
iii) Private Community Features	
Those features under private jursidiction and which provide educational, commercial and health services to a community are included in this category. Examples include churches, homes for the aged, and local shopping centres.	These features may contain temporary or residential populations, some incapacitated, and may be incompatible with the industrial nature of OWMC facilities. In other cases, these features provide essential services to the community. Some of these features would be difficult to relocate.
iv) Private Recreation Features	
This indicator includes a preliminary list of those features under private ownership and operation which provide recreational and leisure opportunities for community residents. Features such as museums, sports complexes, golf courses and arenas were considered in this category.	These features could involve a large number of temporary users or in some cases tourists. The potential for loss of recreational opportunities, disruption to the use of the features or the loss of revenue are undesirable. Such features may not be considered compatible with industrial uses.
1.1.4 Existing Commercial and Industrial Uses	
i) Commercial Facilities	
The number and type of existing commercial uses including shopping centres, stores, offices and personal service uses were considered.	Most commercial activities would not generally be considered compatible with heavy industrial uses. Capital investment in commercial areas is generally intensive.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Industrial Facilities	
The number and type of existing light, medium and heavy industrial uses were considered. Industrial uses are generally characterized by noise, some airborne emissions, rail and truck traffic, etc.	The location of most built-up industrial areas is generally separated from residential uses. Most have good road access. The OWMC facilities are essentially industrial in character. Built-up industrial areas contain a variety of industrial and related buildings and uses. Intensity of areas varies greatly, as does parcel size. Siting opportunities occur primarily in terms of replacement of obsolete or low intensity uses and will most likely be feasible only if a single large property is available.
1.1.5 Future Residents	
i) Projected Population Levels	
An estimate of projected population levels is expressed in terms of persons or housing units, as set out in the land use plan or policies of the area municipality Official Plan or secondary plan.	OWMC facilities are industrial in nature and as such are characterized by noise and rail and truck traffic. Such facilities are generally not compatible with populated residential areas.
ii) Approved Residential Plans of Subdivision	
These include plans for residential subdivisions that have municipal and provincial approval and that will be built at some point in the future.	OWMC facilities are not compatible with residential built-up areas. Approved plans indicate a commitment for development.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
iii) Residential Land Use Designation (Official Plan)	
Lands which have been approved by area municipality Official Plans for residential uses, which may or may not be presently developed. In some cases lands have been approved by municipal Official Plans for future residential uses, but, are at present vacant.	Residential uses would not generally be considered compatible with industrial uses. Use of these areas may involve moving existing residences. Residential designations do not usually permit industrial uses.
iv) Residential Zoning	
This includes lands that have been zoned for residential uses in municipal zoning by-laws.	Areas zoned residential do not normally allow industrial development.
v) Residential Development Proposals	
These include applications for planning approval of development including Official Plan amendments, draft plans of sub-division rezoning applications which are pending with the relevant area municipality, regional municipality, or are awaiting approval or decision by the Minister of Municipal Affairs and Housing or the Ontario Municipal Board.	Any proposals for future residential development will generally be a proximity to existing residential uses. The location of an industrial use in an area with potential for residential development is generally undesirable.
1.1.6 Future Resources	
i) Class 1 Agricultural Land Equivalents	
This is the percent of land on the site which is equivalent to Class 1 capability. The Class 1 equivalent measure is a means of comparing land	Class 1 land is potentially the most productive for common field crops. Class 1 equivalents serve as a measure of the potential for future sustained

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
capabilities on sites which contain more than one capability class.	agriculture production from the soil resource base. The lower the Class 1 equivalent hectarage, the lower the potential for agricultural production. The impact on agricultural land resources is least for the sites with the fewest Class 1 equivalents.
ii) Rural/Agricultural Land Use Designation Rural and/or Agricultural designations in area municipality official plans which refer to non-urban lands, whether currently in agricultural or other rural use.	Lands designated rural or agricultural have longer term opportunity to realize the potential of the land resource base for agriculture than lands designed for industrial or other urban-related uses. The majority of area municipality official plans utilize the terms "rural" and "agricultural" interchangeably to refer to all those lands not designated for urban uses. The degree of constraint will vary depending on the permitted land uses within each designation. In some cases, the agricultural designation refers to prime agricultural lands (a high constraint) while rural refers to the balance of the lands (somewhat lesser constraint).
iii) Provincial Planning Areas Lands designated within the Parkway Belt West Planning Area and the Niagara Escarpment Planning Area.	Provincial policy documents are significant to specific candidate sites. The Parkway Belt Plan restricts uses to those compatible with the Parkway Belt, i.e., agricultural and recreational uses, transportation, utility and pipeline corridors and other acceptable uses. The Niagara Escarpment

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	(N.E.C.) Plan controls are aimed at preserving the natural character of the Escarpment and its adjacent scenic areas and its provisions would prohibit OWMC type facilities. Both the Parkway Belt and N.E.C. Plan are recognized as land use categories in the Halton Regional Official Plan and in area municipality official plans.
1.1.7 Future Commercial and Industrial Uses	
i) Planned and Proposed Commercial Facilities This indicator includes a preliminary list of planned and proposed commercial facilities including shopping centres, offices and personal services.	Most commercial activities would not generally be considered compatible with industrial uses. Private investment may have been committed for development on the basis of official plan designations.
ii) Planned and Proposed Industrial Facilities	
This indicator includes a preliminary list of planned and proposed industrial uses which are generally characterized by noise, some airborne emissions, rail and truck traffic, etc.	Planned and proposed industrial uses will generally be located away from residential uses. The OWMC facilities are essentially industrial in character and as such may be suitably located in proximity to other industrial uses. Plans and proposals for future industrial uses serve as an indicator of the industrial potential for a given area.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
1.2 PHYSICAL AND BIOLOGICAL ENVIRONMENT - Site and Site Vicinity	
1.2.1 Hydrogeology (Natural Containment Potential)	
i) Regional Category	
Regional category refers to a delineation of areas which share common geologic and hydrogeologic characteristics. Categories 1, 2 and 3 and 4 were employed in a hydrogeologic mapping of the Golden Horseshoe in Phase 3A. Categories 1 and 2 are further subdivided into 1a, 1b, 1c and 2a and 2b based on depth of materials.	Generally Category 1 is composed of silt clay soils with lateral and vertical textural uniformity which range from 10 metres to over 30 metres in depth. This hydrogeologic setting should provide natural containment. Category 2 is generally comprised of at least 10 m of silt-clay soils which may be locally intermixed with sand. This hydrogeologic setting may provide only local natural containment. Categories 3 and 4 are generally comprised of a variety of geologic materials of variable thickness. From a hydrogeologic perspective Category 1 has the most suitable conditions for the siting of a special waste management facility. Category 2 lands may be locally suitable and Category 3 and 4 lands are considered unsuitable by OWMC.
ii) Thickness of Confining Layer	
The "confining layer" refers to a continuous unit of fine-grained materials that effec-	The thickness of the confining layer as it relates to the ground water flow path can have

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
tively contains potential contaminants by retarding contaminant migration and effectively protecting underlying ground water aquifers.	a pronounced influence on the length of time necessary for a contaminant to move vertically through the soil layer. As the thickness of the confining layer increases, the travel time similarly increases. Soil units which are thick will provide relatively greater containment than units which are thin.
iii) Geologic Predictability	
The predictability of movement of contaminants in the subsurface is dictated by the geologic unit(s) which dominate the stratigraphic sequence in a given area.	In areas where the stratigraphy is variable and complex, ground water and contaminant movement patterns can be expected to be intricate and complicated. Ground water movement patterns are difficult to predict in such areas. Where the stratigraphy is dominated by uniformly textured soils which are continuous both laterally and vertically, ground water and contaminant movement patterns are relatively more predictable. It is desirable for an OWMC facility to be located in an area where the stratigraphy is uniform and ground water movement is predictable.
iv) Material Texture	
Material texture is dictated by the size of grains which constitute the soil materials.	The rate of ground water and contaminant movement is influenced by the pore spaces between grains (permeability). In granular materials, which are highly permeable, ground water and contaminant movement is potentially rapid. In fine-

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	textured soils, which have low permeability, ground/water and contaminant movement is slow. Fine-textured soils effectively contain potential contaminants by retarding contaminant movement.
v) Oil and Gas Wells Active, inactive and abandoned oil and gas wells were considered.	The number and distribution of oil and gas wells may be a minor constraint to facility siting. Abandoned wells in particular could act as conduits allowing rapid movement of contaminants vertically in underlying aquifers. This concern can be mitigated by plugging the wells and is basically a cost consideration.
1.2.2. Biology	
i) Significant Environmental Units (SEUs) SEUs refer collectively to a number of types of areas which contain special environmental attributes or which perform significant environmental functions. SEUs have been identified in existing reports.	SEU mapping indicates the location and geographic extent of areas known to possess significant environmental features, and/or to perform significant environmental functions. Recognition of these units during the planning process will assist in avoiding and minimizing impacts on known significant environmental sources.
ii) Non-SEU woodlots >20 ha. Wooded areas which are not SEUs but which are greater than 20 ha in area. Most of these areas are not designated in regional official plans.	These areas may have value as a forestry or recreational resource or may provide wildlife habitat. It may also have potential for significance but may not have been studied during ESA or other inventories.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
iii) Other Vegetation	
These are patches of woody vegetation on-site which are less than 20 ha in size and have no SEU designations associated with them.	These vegetation units may provide habitat for significant wildlife species and/or may contribute to important environmental functions. The extent and pattern of all vegetation types is an important consideration in assessing terrestrial wildlife habitat.
iv) Aquatic Habitat	
Aquatic habitat includes any permanent or intermittent creeks, streams, ponds or drainage channels or wetlands found on site or in proximity to the site.	Aquatic systems add to the habitat diversity of an area and influence the variety of fish and wildlife present. It might provide habitat for significant fish and wildlife species and may contribute to important environmental functions.
v) Terrestrial Wildlife Habitat	
It is the set of conditions required by land-based wildlife species. A subjective evaluation of wildlife habitat conditions on each site was made from field observation and aerial photo interpretation.	Generally, the degree of aquatic and terrestrial habitat diversity and amount of wooded cover present determine the significance for wildlife habitat. For example, significance was assigned to sites having large woodland blocks especially if aquatic habitat and other vegetation communites were present on site. Sites with limited natural vegetation cover and aquatic habitat consisting of drainage ditches with intermittent flow or manicured ponds would be expected to have little habitat value for wildlife.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
vi) Local Setting	
The potential functional relationship between biological resources on a site and on adjacent lands. The local biological setting of sites was assessed taking into account vegetation cover patterns and adjacent land use patterns. Major natural vegetation and aquatic systems which extended onto sites from adjacent lands were identified. Adjacent SEUs and non-SEU woodlots greater than 20 hectares were also highlighted.	Major natural vegetation and aquatic systems which extend onto sites from adjacent lands may provide valuable habitat and function as part of a biological system or travel corridor.
1.2.3 Atmospheric Conditions	
i) Existing Air Quality	
Existing ambient air quality on an annual basis is defined with the aid of a composite air quality index for each site by summing the sulphur dioxide, nitrogen oxides, total suspended particulate and total hydrocarbon levels extrapolated from contour maps.	Comparison of the values of this parameter allows the sites to be categorized relative to one another, and subsequently ranked as having low, moderate or high relative pollutant levels.
ii) Topography	
Topographic features on a local-scale have the potential to limit the dispersion of pollution under some meteorological and emission conditions, for example, significant river valleys, elevated receptors.	Higher pollutant concentrations can potentially be experienced if emissions are trapped or constrained by a feature or if direct impingement upon a topographical (elevated) receptor occurs.
iii) Receptors	
Any potential local receptor of emissions from the incinerator stack, with special emphasis on populated areas.	It is generally considered more desirable from the point of view of potential exposure to emissions to locate a facility as far away from receptors (especially sensitive receptors) as possible.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
1.3 COSTS/OPERATIONS	
1.3.1 Land Acquisition	
i) Land Value	
This indicator represents the estimated land value for site lands.	As a public agency responsible for the expenditure of public funds it is a responsibility of OWMC to minimize, where feasible, expenditures. Sites with lower land values would generally be viewed somewhat more favourably than sites with high land values, all other factors being equal.
ii) Land Fragmentation	
Land fragmentation is the division of land into increasingly smaller property holdings. The degree of fragmentation can be measured by the average parcel size or the number of parcels per standard site area.	The higher the degree of fragmentation of the site, the larger the number of owners with which OWMC will have to deal, and therefore the greater the impact on land owners and the greater the degree of difficulty in assembling the site.
iii) Land Ownership	
The property boundaries of all land parcels for all sites were compiled. A distinction was made between lands under private ownership and those under public ownership.	Location of an OWMC facility on publicly-owned land would involve less acquisition of land in private ownership.
1.3.2 Site Improvements	
i) Surface Drainage	
All surface drainage considerations which may affect facility sitings are represented by a "surface drainage" factor. This factor encompasses site - specific drainage considerations such as urban drainage	Site design and operation is influenced to some extent by the surface drainage characteristics of the site. Although engineering and operational measures are available

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
efficiency, potential drainage constraints and ease of implementing surface drainage controls if required.	to mitigate most concerns related to drainage deficiencies, these measures can add to the overall development and operational costs. In keeping with OWMC's goal to minimize financial costs, it is therefore important to anticipate what site drainage improvements may be required.
1.3.3 Utilities, Roads, Airports	
i) Utlity Transmission Lines Re-Routing The type and length of utility transmission lines (hydro, gas, oil, Bell) traversing each site or along roads running through the site were noted.	Utility transmission lines are frequently located within their own exclusive or shared rights-of-way. Disruption to these as a result of facility site selection could have significant cost implictions for OWMC.
ii) Road Closure Required	
For site selection purposes the only road relocation considered involved local access routes.	Fully integrated or partially integrated land for sites require the assembly of a large block of land.
Sites requiring the closure of provincial or regional arterial routes were discarded as such road closures were considered exclusionary.	Due to the state of development within a substantial part of the candidate area, few large parcels of land exist that are adequate to satisfy this need for one large parcel. Consequently, to assemble the required land area the closing of roadways would be required in certain instances. This requirement could affect local users of the route unless reasonable alternative routings exist.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
iii) Airport-Smokestack Height Conflict (Incinerator)	
Airports in proximity to candidate sites could be affected by construction of OWMC facilities. The flight paths over the ground approach to these airfields could be in conflict with the physical structures required on an OWMC site(s), particularly the incinerator stack. This in turn may affect the airport license and/or operation.	Obstacle control protection exists at Pearson International, Hamilton Civic and St. Catharines Airports as defined by Transport Canada Regulations. This regulation prohibits vertical obstructions exceeding 45 metres within a radius of 4000 metres from a theoretical reference point(s) at each airport. OWMC facilities may be restricted in terms of facility location or the height of the incinerator stack.
1.3.4 Site Size and Configuration	
i) Total Area	
The total site area in hectares and acres was calculated.	Sites of adequate overall size but abnormal shape were checked in terms of any operational difficulties associated with locating the facility on that site. As site size and configuration was a factor during the site screening it was generally only a minor consideration during initial comparative evaluation.
2. Factors in Site Vicinity	
2.1 HUMAN ENVIRONMENT	
2.1.1 Existing Residents	
i) Number of people	
This indicator is an estimate of the number of people who reside and work within the site vicinity and who may be affected if a facility were located there.	Potential conflicts with residents in proximity to an OWMC facility are undesirable. Those sites with fewer people within the site vicinity were seen as more desirable than sites with large numbers of people in the site vicinity.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Number of Residences	
The number of residences is the number of housing units, both farm and non-farm related.	Number of residences is the most easily measured indicator of the amount of personal dislocation or residential exposure to be anticipated in the event of facility location in the area.
2.1.2 Existing Resources	
i) Number of Farm Building Complexes-Average or above average with land in 500 m and 1000 m Zones	
Farm Building Complexes refers to the complex of farm buildings, i.e. barns, storage sheds, silos, grain bins, manure storage, etc. The total number of farm buildings rated average or above average on lands within 500 m or 1000 m of the site were recorded.	The nature, size and condition of farm building complexes is indicative of the relative value of farm infrastructure that would be impacted by the siting of an OWMC facility. The characteristics of such facilities can also be indicative of the relative strength of existing agricultural activity adjacent to the sites. Impacts will generally be greater in areas with a higher infrastructure investment.
ii) Sensitive Crops	
Agricultural crops which are considered potentially sensitive to emissions from an incinerator were identified within a 5 km radius of the incinerator site.	The potential impact on sensitive crops may result in loss of revenue. Site vicinities with few or no land areas devoted to sensitive crops are more desirable than areas of intensive sensitive crop cultivation.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
iii) Livestock Populations	
The population of livestock and poultry per 40 ha of farmland within a five km radius of incinerator sites was estimated.	This indicator relates to risk to human health via the food chain and to economic impacts to farm operations, in the event that livestock ingest food which has been affected by incinerator emissions. Low population densities are desired.
2.1.3 Existing Community and and Recreation Features	
i) Public Community Features	
These features under public jurisdiction and which provide educational, health and safety, correctional and government services to a municipality are included in this category. Examples include schools, police and fire stations.	These features may contain temporary or residential populations, some incapacitated and are generally not compatible with the industrial nature of OWMC facilities. In many cases these features would be difficult to relocate.
ii) Public Recreation Features	
These features include those under public jurisdiction which provide recreation and leisure opportunities for residents. Features such as parks, fairgrounds, museums, community and cultural centres were considered in this category.	These features could involve a large number of temporary users or in some cases tourists. The potential for loss of recreational opportunities, disruption to use of the features or the loss of revenue are undesirable. Such features would not generally be considered compatible with industrial uses.
iii) Private Community Features	
These features under private jurisdiction and which provide educational, commercial and	These features may contain temporary or residential populations, some incapacitated and

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
health services to a community. Examples include churches, homes for the aged, special educational facilities, nursing homes and shopping centres.	may not be incompatible with the industrial nature of OWMC facilities. In other cases, these features provide essential services to the community. Generally, some of these features would be difficult to relocate.
iv) Private Recreation Features These features include those under private ownership and operation which provide recreation and leisure opportunities for community residents. Private features such as museums, sports complexes, golf courses and arenas were considered in this category.	These features could involve a large number of temporary users or in some cases tourists. The potential for loss of recreational opportunities, disruption to use of the features or the loss of revenue are undesirable. Such features may not be considered compatible with industrial uses.
v) Known Archaeological and Historical Sites This would include sites and buildings of known historical significance, such as houses, farms, mills, factories, stores and shops. The number and significance of known native (pre 1650) archaeological sites and Euro-Canadian (pre 1867; non-standing) historic sites were recorded.	It is important to identify known archaeological and historical sites as they may have some broad social and cultural relevance and need to be protected. The application mitigative measurers to preserve these sites or the consideration of site relocation must be examined.
2.1.4 Existing Community Character	
i) Land Use Pattern Land use pattern refers to the overall mix of land uses within the vicinity of candidate sites.	Such a factor will provide an indication of land use compatibility or conflicts in the area, the general character of the community and the development potential of certain land parcels.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Social and Economic Character	
Heavy industrial areas, urban fringe industrial areas, emerging industrial areas in proximity to residential and rural areas, rural residential urban fringe areas and urban transition areas and rural areas. An overall general classification of the sites was identified in order to convey a general impression of social and economic character. A key element in the classification was whether the sites were within areas characterized by comparable medium to heavy industrial uses.	The location of OWMC facilities in close proximity to an industrial area was considered more compatible than location in rural areas.
2.1.5 Future Residents	
i) Projected Population Levels	
An estimate of projected population levels can be derived through an examination of Official Plan policies and future land use designations and specific development proposals. This gives an indication of potential population levels in the vicinity of each site.	OWMC facilities are industrial in nature and as such are characterized by noise and rail and truck traffic. Such facilities are generally not compatible with populated areas.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Approved Residential Plans of Subdivision	
These include plans for residential subdivisions that have municipal or provincial approval and that will be built at some point in the future.	OWMC facilities are not compatible with residential built-up areas. Approved plans indicate a commitment for development.
iii) Residential Land Use Designations	
Lands which have been approved by municipal Official Plans for residential uses, which may or may not be presently developed.	The OWMC facilities, are essentially industrial in nature. Residential uses would not generally be considered compatible with industrial uses.
iv) Residential Zoning	
This includes lands that have been zoned for residential uses in municipal zoning by-laws.	The OWMC facilities are essentially industrial in nature. Residential uses would not generally be considered compatible with industrial uses.
v) Residential Development Proposals	
This indicator includes applications for planning approval of development including Official Plan amendments, draft plans of subdivision, rezoning applications which are pending with the relevant area municipality or are awaiting approval or decision by the Minister of Municipal Affairs and Housing or the Ontario Municipal Board.	Any proposals for future residential development will generally be in proximity to existing residential uses. The location of an industrial facility in an area with potential for residential development is undesirable.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
2.1.6 **Future Resources**	
i) Predominant Soil Capability Class	
The predominant soil capability class within a 1 km radius of the site was identified. The soil capability indicates the relative potential of the soil resource base to produce common field crops on a sustained basis.	This indicates the general potential for agriculture in the site vicinity. The higher the capability class, the higher the yield potential for common field crops.
ii) Rural/Agricultural Designation	
Official Plan designations in the site vicinity are an indication of the community's intentions in the short to medium term future for agricultural land uses.	Only lands which are designated rural or agricultural have any long term opportunity to realize the potential of the agricultural land resource base. This designation is generally intended to conserve agricultural resources.
2.1.7 **Existing Commercial and Industrial Uses**	
i) Commercial Facilities	
The number and type of existing commercial uses including shopping centres, offices and personal service uses were considered.	Most commercial activities would not generally be considered compatible with heavy industrial uses. Capital investment in commercial areas is generally intensive. The potential closure of small businesses is a concern.
ii) Industrial Facilities	
The number and type of existing light and heavy industrial uses were considered. Industrial uses are generally characterized by noise, some airborne emissions, rail and truck traffic, etc.	The OWMC facilities are essentially industrial in character and will have a substantial degree of compatibility with many of the existing industrial areas.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	Built-up industrial areas contain a variety of industrial and related buildings and uses. The existence of industrial uses in the site vicinity may be compatible with an OWMC facility.
2.1.8 Future Commercial and Industrial Uses	
i) Planned and Proposed Commercial Facilities	
This indicator includes planned and proposed commercial facilities including shopping centres, offices and personal service uses.	Most commercial activities would not generally be considered compatible with OWMC facilities. Private investment may have been committed for commercial development on the basis of existing official plan designations.
ii) Planned and Proposed Industrial Facilities	
This indicator includes planned and proposed industrial uses generally characterized by noise, some airborne emissions, rail and truck traffic, etc. in the site vicinity.	Planned and proposed industrial uses will generally be located well removed from residential uses. The OWMC facilities are essentially industrial in nature and as such may be suitably located in proximity to other industrial uses.
2.2 Costs (Off-Site)/Operations	
i) Proximity to Rail Access	
All active or abandoned railway lines are included. Proximity of rail lines to potential OWMC facility sites is the indicator of rail service possibilities.	Availability of rail access to integrated treatment sites or to non-integrated physical/chemical-incinerator sites may be a positive locational factor for the haulage of untreated

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	special wastes and/or the haulage of process reagents or additives for large bulk shipments.
3. Access Roads - Local	
3.1 HUMAN ENVIRONMENT	
3.1.1 Transportation Safety	
i) Proximity to Arterial Road	
The distance between the site and the nearest arterial road was measured. Access to individual facility sites will require access over existing roads, the construction of a new roadway connection from the arterial system to the site boundary or direct access from the arterial road.	Where facilities flank an arterial road it is probable that direct access can be provided to the site. However, in instances where the sites are remote from an arterial roadway, provision must be made for improvement of other existing collector or local service roads or the construction of a new roadway from the arterial system to the site boundary.
ii) Difficulty of Access (number of level railway crossings)	
Conditions such as level rail crossings can hinder ease of access to sites.	Those access routes with the fewest structural problems from a transportation point of view are more desirable and have a decreased level of risk associated with their use.
3.1.2 Existing Residents	
i) Number and Size of Population Concentrations	
This indicator refers to rural residential strip development and rural estate subdivisions, small villages and towns.	Sites with access routes passing through few or no population concentrations ranked as more acceptable in comparison to those passing through several and/or major population concentrations.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Number of Residences The number of residential units fronting local access roads, including residences and farm residences, were considered.	Transportation impacts through areas with many residences include increased noise and truck traffic and a possible increased threat to safety. Access routes which have fewer abutting residences are more favourable than routes with many abutting residential uses.
iii) Estimated Population Along Access Roads Estimated population includes the residential population abutting an access route.	The use of a road to transport waste to a site could create potential risks to the health of residents abutting the access road through accidental emissions. Impacts could include potential disruption of the normal use and enjoyment of residential properties (i.e., due to potential noise and traffic disruption).
ii) Distance Through Strip Residential Development This indicator is a measure of the distance trucks would travel through strip residential development along local access roads.	Impacts through residential strip development include increased noise and truck traffic and increased threat to safety. The potential risk as a result of possible spills must also be considered. Access routes passing through areas with little or no residential strip development are more desirable than areas of intense or continuous strip development.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
3.1.3 Existing Resources	
i) Number of Active Farm Building Complexes	
The number of active farm complexes situated along potential local access roads. Farm complexes include all farm buildings, such as barns, storage sheds, silos, grain bins, manure storage, etc.	The number of active farm complexes along access roads indicates the probable degree of conflict between truck movement and movement of farm machinery. The tendency should be to choose sites with access roads that have the fewest number of active farm complexes.
ii) Livestock Populations	
An estimate of the population of livestock and poultry within a 2 km wide band centred on the access roads.	This provides a measure of the relative risk to livestock and the food chain due to spills of untreated material which through vapour or liquid movement from the spill site could affect the health and/or economic value of livestock.
3.1.4 Existing Community and Recreation Features	
i) Community Features	
Features under both private and public jurisdiction which provide educational, health and safety, correctional and government services to a municipality which fronted on access roads are included. Examples include schools, police and fire stations, hospitals, nursing homes and special educational facilities.	Impacts along access roads which have abutting community features include increased noise and possible conflicts with other vehicular traffic presently using these access routes (e.g. school buses). Increased traffic noise in quiet zones around hospitals or nursing homes is not desirable.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Recreation Features	
Features under both public and private jurisdiction which provide recreation and leisure opportunities for residents are included. Features such as museums, sports complexes, golf courses, parks, fairgrounds and community and cultural centres are included in this category.	Increased truck traffic and noise may have an impact on the enjoyment derived from recreational and leisure features. In addition, increased truck traffic may lead to conflicts with other vehicular traffic presently gaining access to such features.
3.1.5 **Future Residents**	
i) Distance Through Residential Land Use Designations	
This indicator represents the distance that local access roads pass through areas that have been designated for residential uses by municipal Official Plans. These designated areas may or may not be presently developed.	Residentially designated areas which are presently not developed represent areas of potential future development. Increased truck traffic and noise through residential areas is not desirable. Local access routes which pass through few or no areas with residential designations are preferable.
3.1.6 **Future Resources**	
i) Length Across Class I Equivalent Agricultural Land	
The length in kilometres of Class 1 equivalent land traversed by local access roads was measured.	This indicates the degree to which land resource potential may be lost if land is taken to widen local access roads.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
3.1.7 Existing Commercial and Industrial Uses	
i) Distance Through Commercial Areas	
This indicator represents the distance local access roads pass through areas of existing commercial development. Commercial uses include shopping centres, offices and personal service uses.	Impacts associated with increased noise and truck traffic through commercial areas are undesirable. Disruption to local businesses or conflicts with vehicular traffic in the commercial area are potential concerns.
ii) Distance Through Industrial Areas	
This indicator represents the distance local access roads pass through areas of existing industrial development. These industries may be light or heavy and are generally characterized by noise, some airborne emissions, rail and truck traffic, etc.	The OWMC facilities are essentially industrial in character and will have a substantial degree of compatibility with many of the existing industrial areas. Impacts associated with increased truck traffic through industrial areas will generally not be as great as routings through residential or commercial areas.
3.1.8 Future Commercial and Industrial Uses	
i) Distance Through Designated Commercial Areas	
This indicator measures the distance through which local access roads travel through designated commercial areas. Such areas are designated for future commercial uses in municipal Official Plans and may presently be developed or undeveloped.	Impacts associated with increased noise and truck traffic through commercial areas are undesirable. Disruption to local businesses or conflicts with existing vehicular traffic are potential concerns.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Distance Through Designated Industrial Areas	
This indicator measures the distance through which local access roads travel through designated industrial areas. Such areas are designated for future industrial uses in municipal Official Plans and may presently be developed or undeveloped.	Impacts associated with increased noise and truck traffic through industrial areas will not be as great as increased traffic through residential or commercial areas.
3.2 PHYSICAL AND BIOLOGICAL ENVIRONMENT	
3.2.1 Hydrogeology	
i) Length of Sensitive Lands Crossed	
The actual linear distance that local access roads cross over hydrogeologically sensitive lands was calculated. Such crossings would include crossings over surface aquifers.	The potential for contamination of surface ground water aquifer through accidental spills of untreated wastes is of concern. Local access roads with fewer and shorter crossings over hydrogeologically sensitive uses (surface aquifers) were rated higher than routes with many or lengthy crossings over sensitive uses.
3.2.2 Stream Crossings	
i) Stream Crossings and Constraint Rating	
The number of crossings over permanent or intermittent streams with sensitive uses, permanent streams with no known uses or intermittent streams were recorded. Water use based on information on file at the	The potential for accidental spills into watercourses is a consideration especially if there are sensitive uses downstream.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
time of initial comparative evaluation was noted. A constraint rating for each access option was also provided.	
4. Access Roads - Regional	
4.1 HUMAN ENVIRONMENT	
4.1.1 Transportation Safety	
i) Transportation Accident Frequency	
The probability of transport accident was calculated based on routings between source sites and receiver centroids and the average annual accident rate by road classification, to produce a value which can be compared between site areas to produce an index of relative accident frequency.	The calculation of an accident frequency rate for each of the site areas requires a determination of the total number of vehicles using each link within the provincial road network. As this was not possible for reasons noted in the factor write-up of Transport Costs (see Comments/Assumptions/ Limitations), a surrogate procedure was developed as an indicator.
ii) Distance to Freeways	
The location of OWMC facilities, in reasonably close proximity to freeways, is viewed to be a desirable attribute.	The impact of road transportation to and from OWMC facilities and in relation to local communities and populations, would generally be minimized where sites are close to freeway systems and arterial road interchanges with the freeway.
iii) Total Number of Level Railway Crossings	
The number of level rail crossings which a waste carrying vehicle must cross to reach the site from a 400 series highway.	Level railway crossings on access roads present a potential transportation safety hazard. The effect of this

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
	hazard can be minimized effectively by providing the railway crossing safety devices as warranted by current guidelines.
iv) Number of Intersections Where a Turn is Required	
The number of intersections along the access route, between the 400 series highway and the site, where a waste carrying vehicle will need to turn.	Public intersections along an access route where a waste hauling vehicle must make a turn adds to the potential risk of the access route.
4.1.2 Existing Residents	
i) Distance Through Strip Residential Development	
This indicator is a measure of the distance trucks would travel through strip residential development along regional access roads.	Impacts through low to high density strip development include increased noise and truck traffic and an increased threat to safety. The potential risk as a result of possible spills must also be considered. Access routes passing through areas with little or no residential strip development are more desirable than through areas of intense or continuous strip development.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Number of Communities by Population	
This indicator refers specifically to the number of organized communities through which designated regional access routes pass. The approximate population of these communities was also noted.	Access routes were ranked according to the number of communities passed through. Access routes passing through few or not organized communities were given a higher ranking.
iii) Estimated Population Along Access Routes	
Estimated population includes the residential population abutting an access route.	The use of a road to transport waste to a site could create potential risks to the health of residents abutting the access road through accidental emissions. Impacts could include potential disruption of the normal use and enjoyment of residential properties (i.e., due to potential noise and traffic disruption).
4.1.3 Existing Resources	
i) Number of Active Farm Building Complexes	
The number of active farm complexes situated along potential regional access roads. Farm complexes include all farm buildings such as barns, storage sheds, silos, grain bins, manure storage, etc.	The number of active farm complexes along the access road indicates the probable degree of conflict between truck movement and movement of farm machinery. The tendency should be to choose sites with access roads that have the fewest number of active farm complexes.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
ii) Sensitive Crops	
An estimate of the sensitive crops grown within a 2 km wide band centred on the access road was determined.	This factor measures the relative risk to sensitive crops of untreated toxic wastes. Access routes which pass through areas where sensitive crops are not intensively grown are preferred.
iii) Livestock Populations	
An estimate was made of the population of livestock and poultry within a 2 km wide band centred on the regional access road.	This provides a measure of the relative risk to livestock and the food chain due to spills of untreated materials which through vapour or liquid movement from the spill site could affect the health and/or economic value of livestock.
4.1.4 **Existing Community and Recreation Features**	
i) Number and Type of Community and Recreation Features	
Features under both private and public jurisdiction which provide educational, health and safety, correctional and government services to a municipality which front on access roads are included. Examples include schools, police and fire stations, hospitals, nursing homes and special educational facilities.	Impacts along access roads which have abutting community features include increased noise and possible conflicts with other vehicular traffic presently using those access routes (e.g. school buses). Increased traffic noise in quiet zones around hospitals or nursing homes is not desirable.

TABLE G-5 (Cont'd)

Initial Comparative Evaluation Factors - Definition and Significance

FACTOR DEFINITION	SIGNIFICANCE
4.2 PHYSICAL AND BIOLOGICAL ENVIRONMENT	
4.2.1 Hydrogeology	
i) Length of Sensitive Lands Crossed (m)	
The actual linear distance that local access roads cross over hydrogeologically sensitive lands was calculated. Such crossings would include crossings over surface aquifers.	The potential for contamination of surface ground water aquifer through accidental spills of untreated wastes is of concern. Regional access routes with few or no crossings over hydrogeologically sensitive uses (surface aquifers) were rated higher than routes with many or frequent crossings over sensitive lands.
4.2.2 Streams Crossings	
i) Stream Crossing and Constraint Rating	
The number of crossings over permanent or intermittent streams with sensitive uses, permanent streams with no known uses or intermittent streams were recorded. Water use based on information on file at the time of initial comparative evaluation was noted. A constraint rating for each access option was also provided.	The potential for accidental spills of untreated wastes into watercourses is a consideration especially if there are sensitive water uses downstream. Routes with fewer crossings of rivers and streams with sensitive uses are more desirable.

TABLE G-6

Factors Excluded from Rating of Siting Options

FACTORS EXCLUDED	REASONS FOR EXCLUSION
Hydrogeology	
• access road considerations	• spill during transit onto geologically sensitive lands unlikely and can be readily cleaned up • if problems exist along access roads, access routes can be changed; site cannot be changed • hydrogeologically - site and site vicinity major long-term consideration
• oil and gas wells	• minor factor in comparing siting options; incomplete data base
• aquifer	• use of aquifer factor in ranking deferred until value of local ground water resource can be established during site-specific data • factor applied in a manner which maintains a diversity of choice for future detailed candidate site investigations and subsequent comparison
Agriculture	
• cultivated land	• minimal differences among sites • secondary consideration in rating sites (subject to significant annual changes)

TABLE G-6 (Cont'd)

Factors Excluded from Ranking of Siting Options

FACTORS EXCLUDED	REASONS FOR EXCLUSION
Land Use	
• approved residential subdivisions, site and site vicinity	• not applicable to any of the potential sites
• projected population levels, site and site vicinity	• as above
• residential land use designations, site	• as above
• residential zoning, site	• as above
• residential development proposals, site and site vicinity	• as above
• residential zoning, site vicinity	• minor relative concern
• distance through existing industrial areas, local access roads	• as above
• distance through designated commercial areas, local access roads	• as above
• distance through designated industrial areas, local access roads	• as above
• future commercial uses, etc. and site vicinity	• as above
Transportation and Utilities	
• physical/chemical treatment plant - incinerator-site proximity to railway access	• minor siting opportunity would not be used to reject sites • insufficient data available on feasibility of railway usage

VOLUME 3

Candidate Site Identification

APPENDIX H

TABLE H.1

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indictors

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Physical Resources (Gartner Lee Associates Ltd.) Level 1	Landfill/Integrated Facilities	
	• average confining layer thickness > 30 • geologic material texture silt-clay, till • geologic predictability - uniform	• provides second level of protection • public and workshop preference
	Physical/Chemical and Incinerator Facilities	
	• average confining layer thickness > 30 m, 20-30 m • geologic material texture silt-clay, till • geologic predictability - uniform	• provides second level of protection
Level 2	Landfill/Integrated Facilities	
	• average confining layer thickness 20-30 m • geologic material texture silt-clay, till • geologic predictability - uniform	• provides second level of protection • soil depth not as great as with Level 1
	Physical/Chemical and Incinerator Facilities	
	• average confining layer thickness 10-20 m	• provides second level of protection • soil depth not as great as with Level 1

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Level 2 (Continued)	° geologic material texture silt-clay, till ° geologic predictability - uniform	
Level 3	Landfill/Integrated Facilities ° average confining layer thickness (m) 20-30, >30 ° geologic material texture - predictability moderate variability ° geologic predictability moderate variability Physical/Chemical and Incinerator Facilities ° average confining layer thickness (m) >30, 20-30, 10-20 ° geologic material texture - silt-clay, till ° geologic predictability - moderate variability	° potential soil depth constraint ° potential soil depth constraint
Major Constraint	Landfill/Integrated Facilities ° average confining layer thickness 10-20m, < 10m ° geolcgic material texture - silt-clay, till ° geologic predictability, moderate variability	° fails to provide second level of protection

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Major Constraint (Continued)	Physical/Chemical and Incinerator Facilities ° average confining layer thickness < 10m ° geologic material texture - silt-clay, till ° geologic predictability - moderate variability	° fails to provide second level of protection
Surface Drainage (Gartner Lee Associates Ltd./ M.M. Dillon Ltd.) Level 1	° topographic relief - good relief ° on-site surface drainage - well developed, continuous drainage network ° upstream drainage area - small upstream area ° susceptibility to flooding - minor flooding potential; minor or no mitigation required ° availability of outlet - outlet readily available ° drainage sheds - surface drainage - single or small number of watercourses, contaninants can be readily confined in event of release	° provides second level of protection

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Level 2	• topographic relief - moderate relief • on-site surface drainage - moderately well-developed drainage network • upstream drainage area - moderately sized • susceptibility to flooding - moderate flooding potential - mitigation required • availability of outlet - outlet available but moderate upgrading required • drainage sheds - number of watercourses - moderately difficult to confine contaminants in the event of release	• potentially provides second level of protection • constraint mitigatible
Level 3	• topographic relief - flat site • on-site surface drainage - poorly developed drainage network • upstream drainage area - large upstream drainage area • susceptibility to flooding - flooding potential - potentially not mitigatible • availability of outlet - major mitigative measures to conduct runoff from site	• potentially acceptable

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	• drainage sheds - multiple receiving bodies - difficult to confine contaminants in the event of an accidental release	
Natural Environment (Gartner Lee Associates Ltd.) No Constraint	• little natural vegetation cover • few waterbodies • little potential for providing wildlife habitat	• absence of constraint
Minor Constraint	• wooded patches or thickets • a few ponds and/or intermittent streams • some potential as terrestrial wildlife habitat • limited or no significant connections to adjacent land	• relatively minor constraint
Moderate Constraint	• patches of woods less than 20 ha in size • streams • ponds • terrestrial wildlife habitat • a feature which functionally connects site to adjacent lands	• moderate constraint to siting • variability in suitability • limited information to warrant site rejection
Major Constraint	• presence of a designated SEU within site • terrestrial wildlife habitat potential	• major potential constraint • potentially acceptable

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Air Dispersion/Air Quality (Ontario Research Foundation) No Constraint	• relatively unpopulated • relatively low levels of airborne pollutants • no significant topographic features	• absence of constraint
Minor Constraint	• small potential topographic, existing air quality or local population exposure constraint	• relatively minor constraint • mitigatible
Moderate Constraint	• combination of 2 or 3 minor constraints or existence of a single more moderate constraint (topographic, existing air quality and local population exposure)	• moderate constraint to siting • potentially mitigatible • insufficient information for site rejection
Major Constraint	• major topographic, air quality or local population limitation	• severe potential risk • potentially sufficient information for site rejection
Air Dispersion/Air Quality (Ecologistics (Ltd.) Sensitive Crops and Livestock Low	• score = sensitive crop index + livestock density index	• relative absence of constraint • progessively more constrained

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	Indices — Sensitive Crops ($000s) 1 — <130 2 — 130-170 3 — >170 Indices — Livestock Density (#/40 ha) 1 — < 1,000 2 — 1,000-2,000 3 — > 2,000 • score range = 2	
Moderately Low	• score range = 3	• relatively minor constraint
Moderate	• score range = 4	• relatively moderate constraint to siting
High	• score range = 5	• relatively major constraint to siting

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Very High	° score range = 6	° severe risk to siting
Air Dispersion/ Air Quality (Institute of Environmental Research Inc.) Population Levels Within five km Radius of PI Site or Component Ranking Level 1	° population levels - less than 5,000	° relative absence of constraint
Ranking Level 2	° population levels - 5,000 to 9,999	° relatively minor constraint
Ranking Level 3	° population levels 10,000 to 19,999	° relatively moderate constraint
Ranking Level 4	° population levels 20,000 to 29,999	° relatively major constraint
Ranking Level 5	° 30,000	° relatively severe risk

TABLE E.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Agricultural Resources (Ecologistics Ltd.)	Site	
Low	• farm building complexes - 0 to 1 point range • land fragmentation - >15 points • class 1 equivalent as percent of site size • designated land use - industrial and heavy industrial • land ownership - public lands - >40% of site	• absence or relative absence of constraint
	Site Vicinity	
	• farm buildings - 0 to 3 point range • sensitive crop and livestock rating - 2 • soil capability class 3 or class 3/4 • predominant land use designation - industrial and heavy industrial	
	Site	
Moderately Low	• farm buildings - 2 to 3 point range • land fragmentation - 10 to 15 points	• relatively minor constraint

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	• soil capability (% of site) - 45% to 65% - class 1 equivalent • designated land use - special policy area • land ownership - public lands - 20% to 40% of the site Site Vicinity • farm buildings - 4 to 7 point range • sensitive crop and livestock rating - 3 • soil capability class 2 = 3 or 3 2 • designated land use - special policy area	
Moderate	Site • farm buildings 4 to 5 point range • land fragmentation - 5 to 9 points • soil capability (% of site) 66% to 85% - class 1 equivalent • land ownership - public lands - 1% to 19% of site Site Vicinity • farm buildings - 8 to 11 point range • sensitive crop and livestock rating - 4	• relatively moderate constraint

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	• soil capability class - class 2	
High and Very High	Site • farm buildings more than 5 points • land fragmentation fewer than 5 points • soil capability - class 1 equivalents (% of site) greater than 85% of site • designated land use - rural and agricultural • land ownership - all private lands Site Vicinity • farm buildings more than 11 points • sensitive crop and livestock rating - 5 and 6 • soil capability class 1 • designated land use - rural and agricultural designations	• relatively major agricultural impacts
Archaeological Resources (Gartner Lee Associates Ltd. and Museum of Indian Archaeology) Low	• no known archaeological site on potential site or in site vicinity	• absence of constraint

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	• archaeological potential - low to medium (0 to 66%) percentage of land within potential site • no known historic site	
Medium	• no known archaeological site on potential site or in site vicinity • archaeological potential medium to high - 50%+ and/or known historic site	• minor constraint • constraint mitigatible
High	• a known archaeological site on potential site or in site vicinity • archaeological potential - medium to high - 50%+ and/or known historic site	• moderate constraint • potentially mitigatible
Severe	• important known archaeological site • archaeological potential - more than 66% and/or known historic site	• major constraint • potentially not mitigatible
Community Character (Institute of Environmental Research Inc.)		
Most Compatible	• heavy industrial area	• very positive siting consideration

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Compatible	° urban fringe, industrial area; within view of industrial area; separated from residential/agricultural uses	° positive siting consideration
Moderately Compatible	° emerging industrial area; proximity to residential and rural areas	° minor constraint
Less Compatible	° rural residential; urban fringe area with some agriculture ° no industry ° urban transition area	° variability in suitability ° potentially suitable ° insufficient information to warrant site rejection
Least Compatible	° rural residential; agricultural ° no industry ° rural area	° major social/land use conflict
Ranking of Population Affected On-Site and In Site Vicinity (Institute of Environmental Research Inc.)		
Rank 1 Level	° population range (0-50)	° relative absence of constraint

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Rank 2 Level	° population range 51-100	° relatively minor constraint
Rank 3 Level	° population range 101-150	° relatively moderate constraint
Rank 4 Level	° population range 151-200	° relatively major constraint
Rank 5 Level	° population range 200+	° relatively severe potential risk or impact
Community and Recreation Features (Institute of Environmental Research Inc.) Ranking 1	 ° no features on sites	 ° absence of constraint
Ranking 3	° one or more features	° relatively minor constraint ° mitigatible ° requires further consideration ° could be accommodated and co-exist with the OWMC facilities

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Ranking 5	° one or more features	° moderate constraint ° limited information for decision-making ° judged to pose a higher degree of constraint but still not sufficient to recommend site rejection
Land Use/Land Ownership (Marshall Macklin Monaghan Ltd/ Leon Kentridge Associates Ltd.)	a) Landfill/Integrated Site	
Low Constraint	° number of residences displaced - 0 to 10 ° no industrial relocation ° no commercial relocation ° land value - up to $5,000/acre ° land fragmentation - up to 10 parcels ° land ownership - public ° industrially designated Site Vicinity ° number of residences - 0 to 15 ° planned and proposed industrial facilities ° industrial facilities	° some positive siting considerations ° lowest levels of relative constraints

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	• land use pattern - vacant or agricultural with industrial or other significant non-farm uses • industrial or agricultural land use designation	
	b) Physical/Chemical Treatment Plant/Incinerator Site • number of residences displaced - 0-10 • no industrial relocation • no commercial relocation • land value - up to $5,000/acre • land fragmentation - up to 10 parcels • land ownership - public • industrially designated Site Vicinity • number of residences 0-15 • planned and proposed industrial facilities • medium or heavy industrial facilities • projected population levels - 0	

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	• land use pattern-vacant or agricultural with industrial or significant non-farm uses	
	c) Landfill/ Integrated Site	
Moderate Constraint	• number of residences displaced - 11-15 • land values - $5,000-$20,000/acre • land fragmentation - 10-20 parcels • land ownership - private • rural/agricultural designation Site Vicinity • number of residences - 16 to 24 • including existing industrial facilities • land use pattern - rural/agricultural • rural/agricultural or industrial land use designation	• moderate constraint to siting

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Moderate Constraint	d) Physical/Chemical Treatment Plant/Incinerator Site • number of residences displaced - 11 to 15 • existing medium industrial facilities • land values - $5,000-$20,000/acre • land fragmentation 10 to 20 parcels • land ownership - private • rural/agricultural designation Site Vicinity • number of residences - 16 to 24 • existing medium industrial facilities • land use pattern - agricultural • projected population level - more than 0 • rural/agricultural or industrial land use designation	
	e) Landfill/Integrated Site	
Major Constraint	• number of residences - 20+ • land values - over $20,000/acre • land fragmentation - over 20 parcels • land ownership - private	• major land use conflict

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	• rural/agricultural designation • existing commercial facilities Site Vicinity • number of residences - 25+ • existing commercial facilities • land use pattern - agricultural, non-farm residences • residential land use designations	
Major Constraint	f) Physical/Chemical Treatment Plant/Incinerator Site • number of residences displaced - over 20 • land value - over $20,000/acre • projected population levels - more than 0 • land fragmentation - over 20 parcels • land ownership - private • existing commercial facilities	

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
	Site Vicinity • number of residences - 25 • major existing commercial facilities • projected population more than 0 • land use pattern - agricultural, clusters of residences beyond site vicinity • residential land use designations	
Transportation and Utilities (M.M. Dillon Ltd.) Low	Site • no site constraints (road closure, transmission line re-routings)	• absence of constraint
Moderate	• 1 or 2 site constraints	• minor and mitigatible
High	• 3 constraints	• moderate constraint, potentially mitigatible
Low	Site Vicinity • no constraint	• absence of constraint

TABLE H.1 (Cont'd)

Consultants' Ranking of Factors - Candidate Site Identification

Site/Site Vicinity Factors and Indicators

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING
Moderate	• local road improvements or rail crossing required	• minor constraint
High	• local road improvements and at-grade rail conflict	• moderate constraint, potentially mitigatible
Very High	• smoke stack conflict	• potentially exclusionary; requires site-by-site interpretation
Low	Regional Access (from waste source to site) • combined transport cost and accident index - 1.0 to 1.03	• positive siting consideration
Moderate	• combined transport cost and accident index 1.15 to 1.28	• moderate constraint
High	• combined transport cost and accident index - 1.37 to 1.43	• major constraint

VOLUME 3

Candidate Site Identification

APPENDIX I

TABLE I-1

CONSULTANTS' RANKING OF FACTORS - CANDIDATE SITE IDENTIFICATION - ACCESS ROUTE FACTORS AND INDICATORS

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Natural Environment (Gartner Lee Associates Ltd.) No or Minor Constraint	- no or intermittent streams with no known sensitive uses	• absence or relative absence of constraint
Moderate Constraint	- few stream crossings	• minor constraint to siting • insufficient information for decision-making
Major Constraint	- potentially significant stream crossings - important fish population	• potential constraint to siting • potentially mitigatible • limited information for decision-making
Agricultural Resources (Ecologistics Ltd.) Low	Local Access Roads - Active farm complexes (#) - 0 - Livestock population (#) < 1000 - Class 1 equivalent (km) - < 1	• absence or relative absence of constraint
Moderate	- Active farm complexes (#) 1-3 - Livestock population (#) 1000 - 10000 - Class 1 equivalent (km) - 1-2	• relatively minor constraint • moderate constraint for comparison of access route options but minor constraint as part of siting options

TABLE I-1 (Cont'd)

CONSULTANTS' RANKING OF FACTORS – CANDIDATE SITE IDENTIFICATION – ACCESS ROUTE FACTORS AND INDICATORS

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
High	- Active farm complexes (#) > 3 - Livestock population (#) > 10,000 - Class 1 equivalent (km) > 2	• potential constraint • requires more detailed analysis • major constraint for comparison of access route options but moderate constraint as part of siting options
Agricultural Resources (Ecologistics Ltd.)	Regional Access Roads	
Low	- Active farm complexes (#) < 10 - Livestock population (#) < 100000 - Sensitive crops ($000s) < 100000	• absence or relative absence of constraint
Moderate	- Active farm complexes (#) 10-30 - Livestock population (#) 100000-300000 - Sensitive crops ($ 000s) 100000-500000	• relatively minor constraint for comparison of siting options • moderate constraint for comparison of access route options
High	- Active farm complexes (#) > 30 - Livestock population (#) > 300000 - Sensitive crops ($ 000s) > 500000	• potential constraint • requires more detailed analysis • major constraint for comparison of access route options

TABLE I-1 (Cont'd)

CONSULTANTS' RANKING OF FACTORS - CANDIDATE SITE IDENTIFICATION - ACCESS ROUTE FACTORS AND INDICATORS

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Social and Economic (Institute of Environmental Research Inc.)		
1	- less than 100 people on route - no population concentrations - one or less features	° absence or relative absence of constraint
2	- more than 100 people on route - no population concentrations - two or three features	° relatively minor constraint
3	- several hundred people on route - through minor population concentrations - four to eight features	° moderately low constraint
4	- several hundred people on route - through major population concentrations - more than eight features	° moderately high constraint
5	- several hundred people on route - through major population concentrations - more than eight features	° major constraint

TABLE I-1 (Cont'd)

CONSULTANTS' RANKING OF FACTORS - CANDIDATE SITE IDENTIFICATION - ACCESS ROUTE FACTORS AND INDICATORS

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Land Use and Land Ownership (Marshall Macklin Monaghan Ltd./ Leon Kentridge Associates Ltd.)	Landfill/Integrated Access Roads - Local	
Low Constraint	- number of residences 0-10 - distance through strip residential development - 0 km - distance through residential designation - 0 km Access Roads - Regional - distance through strip residential development - 0 km - Physical/Chemical Treatment Plant/Incinerator Access Roads - Local - number of residences 0-10 - distance through strip residential development - 0 km - distance through residential designations - 0 km	• absence or relative absence of constraint

TABLE I-1 (Cont'd)

CONSULTANTS' RANKING OF FACTORS - CANDIDATE SITE IDENTIFICATION - ACCESS ROUTE FACTORS AND INDICATORS

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Land Use and Land Ownership Low Constraint (Cont'd)	Access Roads - Regional - distance through strip residential development - 0 km	
Moderate Constraint	Landfill/Integrated Access Road - Local - number of residences 11-20 - distance through strip residential designations up to 0.5 km inclusive - distance through designated commercial area up to 0.5 km Access Roads - Regional - distance through strip residential development 0-4 km	• moderate constraint to siting
	Physical/Chemical Treatment Plant/ Incinerator Access Road - Local - number of residences 11-20 - distance through strip residential designations - up to 0.5 km inclusive Access Road - Regional - distance through strip residential development 0-4 km.	• major constraint to siting

TABLE I-1 (Cont'd)

CONSULTANTS' RANKING OF FACTORS - CANDIDATE SITE IDENTIFICATION - ACCESS ROUTE FACTORS AND INDICATORS

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Land Use and Land Ownership High Constraint (Conc'd)	Landfill/Integrated Access Road - Local - number of residences over 20 - distance through strip residential designations - over 0.5 km - distance through existing or designated commercial areas over 0.5 km Access Roads - Regional - distance through strip residential development-over 4 km Physical/Chemical Treatment Plant/ Incinerator Access Road - Local - number of residences - over 20 - distance through strip residential designations-over 0.5 km - distance through existing or designated commercial areas-over 0.5 km	• major constraint to siting

TABLE I-1 (Cont'd)

CONSULTANTS' RANKING OF FACTORS - CANDIDATE SITE IDENTIFICATION - ACCESS ROUTE FACTORS AND INDICATORS

CONSULTANTS' RANKING	FACTORS	MAJOR REASONS FOR RANKING/COMMENTS
Transportation	Access Roads - Regional - distance through strip residential development-over 4 km	
(M.M. Dillon Ltd.) Low	Regional Access (400 series Highway to site) - relatively low accident frequency value	° positive siting consideration
Moderate	- relatively* moderate accident frequency value	° moderate constraint
High	- relatively* high accident frequency value	° major constraint

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* refers to the comparison of accident frequencies of different routes to a given site.

P-J.1
10-31-84

VOLUME 3

Candidate Site Identification

APPENDIX J

TR-12/
J-4.1
12/10/84

SITE AREA ACCESS ROADS - LOCAL

Table J.1 Comparative Evaluation of Access Route Options: LF-4H Integrated

Page 1 of 3

FACTORS	INDICATORS	(1)	(2)	LF-4H (3)	(4)	(5)	(6)	(7)	(8)
1 Human Environment									
IA Transportation Safety	- proximity to arterial road	0 km	0 km	0 km	0 km	0 km	0 km	0 km	0 km
	- difficulty of access (number of level railway crossings)	0	0	0	0	0	0	0	0
IB Existing Residents	- number and size of population concentrations	0	-	none	none	-	-	-	-
	- number of residences (housing)	15	-	25	22	-	-	-	-
	- estimated population along access roads	48	-	80	71	-	-	-	-
	- distance through strip residential development (km)	2.5 (Milton)	-	0	0	-	-	-	-
IC Existing Resources	- number of active farm complexes	3	-	7	1	-	-	-	-
	- livestock populations along access routes (within 2 km band) (000s)	14.1	-	0.4	0.4	-	-	-	-
ID Existing Community and Recreation Features	- number and type - community features	1-Milton District Hospital	-	1-Century farm	1-Century farm	-	-	-	-
	- number and type - recreation features	0	-	0	0	-	-	-	-
IE Future Residents	- distance through residential land use designations (km)	2.3	-	- 0.6 (within Parkway belt)	0	-	-	-	-
IF Future Resources	- length across Class I agricultural equivalent land (km)	6.3	-	2.9	2.9	-	-	-	-
IG Existing Commercial and Industrial Uses	- distance through industrial areas (km)	0.75	-	0	0	-	-	-	-
	- distance through commercial areas	0	-	0	0	-	-	-	-
IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	-	0	0	-	-	-	-
	- distance through designated industrial areas (km)	0.75	-	0	0	-	-	-	-

Table J.1 Comparative Evaluation of Access Route Options: LF-4N Integrated

SITE AREA	FACTORS	INDICATORS	(1)	(2)	LF-4N (3)	(4)	(5)	(6)	(7)	(8)
ACCESS ROADS -										
LOCAL	I Physical & Biological Environment									
	IIA Hydrogeology	- length of sensitive lands crossed (m)	400	-	-	200	-	-	-	-
	IIB Stream Crossings	- number of stream crossings	3	-	4	4	-	-	-	-
		- stream crossing constraint rating	minor constraint	-	major constraint	minor constraint	-	-	-	-
REGIONAL	I Human Environment									
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	37.5	34.9	48.0	60.1	65.6	80.7	90.9	25.8
		- distance to freeways	- 9.6 km to 401	- 9.0 km to 401	- 11.2 km to 401	- 14.0 km to 401	- 15.3 km to 401	- 18.8 km to 403	- 21.2 km to QEW	- 14.3 km to QEW
		- total number of level railway crossings	3	1	2	2	2	1	1	1
		- number of intersections where a turn is required	3	2	1	3	1	1	1	1
	IB Existing Residents	- distance through strip residential development (km)	0	- 0.5 km (Steeles Ave/ CP Rail)	- 0.3 km (Omagh)	- 0.6 km (Omagh)	- 0.6 km (Omagh) - 0.5 km (Drumquin)	- 0.6 km (Paradise Subdivision) - 0.6 km (Omagh) - 0.5 km (Drumquin)	- 2.0 km (Oakville) - 0.6 km (Omagh) - 0.5 km (Drumquin)	- 1.7 km (Palermo)
		- number of communities by population	1- Milton (29,591)	1- Milton (29,591)	- Boyne (<25) - Omagh (30)	22-Boyne (<25) -Omagh (30)	4- Agerton (<25) - Drumquin (<25) - Omagh (30) - Boyne (<25)	4- Drumquin (<25) - Omagh (30) - Boyne (<25) - Paradise Subdivision	4- Oakville (76,720) - Drumquin (<25) - Omagh (30) - Boyne (<25)	2- Palermo (200) - Boyne (<25)
		- estimated population along access routes*	4	163	71	116	276	262	340	346
	IC Existing Resources	- number of active farm complexes	2	5	6	11	26	16	23	17
		- sensitive crops ($000s)	21.7	106.3	100.2	148.7	255.4	764.3	613.3	97.6
		- livestock populations (000s)	7.8	69.4	8.9	9.4	10.0	10.0	11.8	29.0

* **Note:** Population estimated along access roads includes portions of population in the population concentrations.

Table J.1 Comparative Evaluation of Access Route Options: LF-4N Integrated

SITE AREA	FACTORS	INDICATORS	(1)	(2)	LF-4N (3)	(4)	(5)	(6)	(7)	(8)
ACCESS ROADS -										
REGIONAL	ID Existing Community & Recreation Features	- number and type of community and recreation features	5-cemetery - correctional centre - park - police station - chamber of commerce	5-correctional centre - park - chamber of commerce - police station - hall	4-church and cemetery (2) - park - community centre	4-church and cemetery (2) - park - community centre	9-golf course - church and cemetery (3) - horse stables/ riding - school - parks (2) - community centre	6-parks (2) - school - community centre - church and cemetery (2)	20-municipal centre - mall - churches (4) - college - memorial hall - church site - coast guard depot - schools (2) - maintenance yard - parks and recreation operations centre - health clinic - parks (2) - community centre - cemeteries (2)	6-scenic trail riding - MTC patrol - park - golf club - regional offices - provincial park
	II Physical & Biological Environment									
	IIA Hydrogeology[1]	- length of sensitive lands crossed (m)	0	350	1,400	250	5,850	2,650	2,950	1,400
	IIB Stream Crossings	- number of stream crossings	6	13	9	13	18	30	29	16
		- stream crossing constraint rating	major	moderate	major	major	major	major	major	major

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[1] Length of sensitive lands crossed (m) not used for siting option comparison

Table J.2 - Comparative Evaluation of Access Road Options: LF-3C - Integrated

SITE AREA	FACTORS	INDICATORS	(1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -								
LOCAL	I Human Environment							
	IA Transportation Safety	- proximity to arterial road	3.2 km	3.2 km	3.2 km	3.2 km	0 km	3.2 km
		- difficulty of access (number of level railway crossings)	-	-	-	-	-	-
	IB Existing Residents	- number and size of population concentrations	none	none	none	none	-	none
		- number of residences (housing)	24	24	24	24	-	24
		- estimated population along access road	84	84	84	84	-	84
		- distance through strip residential development (km)	0	0	0	0	-	0
	IC Existing Resources	- number of active farm complexes	13	13	13	13	-	13
		- livestock populations along access routes (within 2 km band) (000s)	36.1	36.1	36.1	36.1	-	36.1
	ID Existing Community and Recreation Features	- number and type - community features	0	0	0	0	-	0
		- number and type - recreational features	0	0	0	0	-	0
	IE Future Residents	- distance through residential land use designations (km)	0	0	0	0	-	0

Table J-2 - Comparative Evaluation of Access Road Options: LF-3C - Integrated

SITE AREA		FACTORS	INDICATORS	(1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -									
LOCAL	I	Human Environment							
	IF	Future Resources	- length across Class I agricultural equivalent land (km)	2.1	2.1	2.3	2.3	-	2.3
	IG	Existing Commercial and Industrial Uses	- distance through commercial areas (km)	0	0	0	0	-	0
			- distance through industrial areas (km)	0	0	0	0	-	0
	IH	Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	0	0	0	-	0
			- distance through designated industrial areas (km)	0	0	0	0	-	0

Table J.2 - Comparative Evaluation of Access Road Options: LF-3C - Integrated

SITE AREA		FACTORS	INDICATORS	(1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -									
LOCAL	II	Physical & Biological Environment							
	IIA	Hydrogeology	- length of sensitive lands crossed (m)	100	100	100	100	-	100
	IIB	Stream Crossings	- number of stream crossings	4	4	4	4	-	4
			- stream crossing constraint rating	minor	minor	minor	minor	-	minor
REGIONAL	I	Human Environment							
	IA	Transportation Safety	- transportation accident frequency (accidents/million vehicles)	119.0	146.8	100.2	101.0	104.3	83.8
			- distance to freeways	- 32.0 km to QEW	- 31.8 km to QEW	- 24.5 km to QEW	- 28.9 km to QEW	- 23.7 km to QEW	- 28.6 km to QEW
			- total number of level railway crossings	0	1	2	1	2	2
			- number of intersections where a turn is required	3	3	6	8	13	3
	IB	Existing Residents	- distance through strip residential development (km)	- 4.5 km (Vineland) - 0.2 km (Bismarck)	- 4.5 km (Vineland) - 1.5 km (Wellandport) - 1.0 km (Boyle)	- 4.0 km (Beamsville) - 0.2 km (Bismarck) - 1.0 km (St. Anns)	- 1.9 km (Grimsby) - 1.6 km - 0.2 km (Bismarck)	- 1.9 km (Grimsby) - 2.2 km (Smithville)	- 1.8 km (Grimsby) - 1.9 km (Smithville) - 0.2 km (Bismarck)
			- estimated population along access routes*	432	492	316	237	234	513
			- number of communities by population	2-Vineland (1150) Bismarck (50)	2-Vineland (1150) - Wellandport (200)	3-Beamsville (5,000) - St. Anns (75) Bismarck (50)	3-Grimsby (16,007) - Smithville (2,000) - Bismarck (50)	2-Grimsby (16,007) - Smithville (2,000)	3-Grimsby (16,007) - Smithville (2,000) - Bismarck (50)

* Excludes populations listed under "number of communities by populations"

Table J.2 - Comparative Evaluation of Access Road Options: LF-3C - Integrated

SITE AREA	FACTORS	INDICATORS	(1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -								
REGIONAL	IC Existing Resources	- number of active farm complexes	41	32	33	36	40	42
		- sensitive crops ($000s)	2,007.0	2,182.6	2,039.8	707.8	634.1	1,128.1
		- livestock populations (000s)	486.0	278.5	1,348.6	571.1	524.5	862.1
	I Human Environment							
	ID Existing Community & Recreation Features	- number and type of community and recreation features	11 - experimental farm - churches (3) - schools (2) - conservation areas (2) - women's centre - campsite - hall	15 - experimental farm - churches (4) - school - conservation area - women's centre - campsite - hall - library - post office - Niagara Region Rd. Yard - lodge - Odd Fellows Temple	9 - senior citizens residence - parks (2) - church - cemetery - synagogue - Bismarck Kartway - hall - school	15 - home for aged - police station - churches (6) - Niagara Region Rd. Yard - school - railway station - park - Bismarck Kartway - hall - post office	19 - home for aged - police station - churches (6) - Niagara Region Rd. Yard - schools (2) - railway station - post office - library - fire hall - cemetery - municipal office - conservation club - town hall	18 - schools (3) - churches (6) - halls (3) - mini-golf - community centre/ arena - post office - cemetery - park - Bismarck Kartway
REGIONAL	II Physical & Biological Environment							
	IIA Hydrogeology	- length of sensitive lands crossed (m)	4,950	4,300	2,200	3,000	3,050	2,350
	IIB Stream Crossings	- number of stream crossings	23	22	11	16	15	21
		- stream crossing constraint rating	major	major	moderate	moderate	moderate	moderate

Table J.2 - Comparative Evaluation of Access Road Options: LF-3C - Integrated

SITE AREA	FACTORS	INDICATORS	(7)	(8)	(9)
ACCESS ROADS -					
LOCAL	I Human Environment				
	IA Transportation Safety	- proximity to arterial road	0 km	0 km	3.2 km
		- difficulty of access (number of level railway crossings)	-	-	-
	IB Existing Residents	- number and size of population concentrations	-	-	none
		- number of residences (housing)	-	-	24
		- estimated population along access road	-	-	84
		- distance through residential strip development (km)	-	-	0
	IC Existing Resources	- number of active farm complexes	-	-	13
		- livestock populations along access routes (within 2 km band) (000s)	-	-	36.1
	ID Existing Community and Recreation Features	- number and type - community features	-	-	0
		- number and type - recreational features	-	-	0
	IE Future Residents	- distance through residential land use designations (km)	-	-	0

Table J.2 - Comparative Evaluation of Access Road Options: LF-3C - Integrated

SITE AREA	FACTORS	INDICATORS	(7)	(8)	(9)
ACCESS ROADS -					
LOCAL	I Human Environment				
	IF Future Resources	- length across Class I agricultural equivalent land (km)	-	-	2.3
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	-	0
		- distance through industrial areas (km)	-	-	0
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	-	0
		- distance through designated industrial areas (km)	-	-	0

Table J.2 - Comparative Evaluation of Access Road Options: LF-3C - Integrated Page 7 of 8

SITE AREA		FACTORS	INDICATORS	(7)	(8)	(9)
ACCESS ROADS -						
LOCAL	II	**Physical & Biological Environment**				
	IIA	Hydrogeology	- length of sensitive lands crossed (m)	-	-	100
	IIB	Stream Crossings	- stream crossing constraint rating	-	-	4 minor
REGIONAL	I	**Human Environment**				
	IA	Transportation Safety	- transportation accident frequency (accidents/million vehicles)	87.1	96.6	93.3
			- distance to freeways	- 23.4 km to QEW	- 21.9 km to QEW	- 27.1 km to QEW
			- total number of level railway crossings	3	2	1
			- number of intersections where a turn is required	9	12	6
	IB	Existing Residents	- distance through strip residential development (km)	- 1.8 km (Grimsby) - 2.2 km (Smithville)	- 4.2 km (Grimsby/ Lincoln) - 2.2 km (Smithville)	- 4.2 km (Grimsby/ Lincoln) - 1.6 km (Smithville) - 0.2 (Bismarck)
			- estimated population along access road*	510	262	266
			- number of communities by population	2-Smithville (2,000) - Grimsby (16,007)	2-Smithville (2,000) - Grimsby (16,007)	3-Smithville (2,000) - Grimsby (16,007) - Bismarck (50)

* Excludes populations listed under number of communities by population.

Table J.2 - Comparative Evaluation of Access Road Options: LF-3C - Integrated

SITE AREA	FACTORS	INDICATORS	(7)	(8)	(9)
ACCESS ROADS -					
REGIONAL	IC Existing Resources	- number of active farm complexes	50	39	32
		- sensitive crops ($000s)	944.1	1,148.8	1,222.4
		- livestock populations (000s)	677.2	514.2	560.8
	ID Existing Community & Recreation Features	- number and type of community and recreation features	22 - schools (4) - churches (6) - halls (2) - minigolf - community centre/arena - post office - library - fire hall - conservation club - cemeteries (2) - town hall	22 - home for aged (2) - police station - churches (5) - schools (3) - legion - cemeteries (2) - Niagara Region Rd. Yard - railway station - post office - municipal offices - library - fire hall - conservation club - town hall	18 - home for aged (2) - police station - churches (5) - schools (2) - legion - cemetery - Niagara Region Rd. Yard - railway station - park - Bismarck Kartway - hall - post office
	II **Physical & Biological Environment**				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	2,400	3,950	3,900
	IIB Stream Crossings	- number of stream crossings	21	22	22
		- stream crossing constraint rating	moderate	moderate	moderate

Table J.3 Comparative Evaluation of Access Route Options: LF-8C Integrated

SITE AREA	FACTORS	INDICATORS	(1)	(2)	LF-8C (3)	(4)	(5)	(6)
ACCESS ROADS -								
LOCAL	1 Human Environment							
	1A Transportation Safety	- proximity to arterial road	1.4 km	2.3 km	1.4 km	1.4 km	1.4 km	1.4 km
		- difficulty of access (number of level railway crossings)	-	-	-	-	-	-
	1B Existing Residents	- number and size of population concentrations	none	none	none	none	none	none
		- number of residences (housing)	3	3	3	3	3	3
		- estimated population along access roads	11	11	11	11	11	11
		- distance through strip residential development (km)	0	0	0	0	0	0
	1C Existing Resources	- number of active farm complexes	2	0	2	2	2	2
		- livestock populations along access routes (within 2 km band) (000s)	40.0	0.3	40.0	40.0	40.0	40.0
	1D Existing Community and Recreation Features	- number and type - community features	0	1-church	0	0	0	0
		- number and type - recreation features	0	0	0	0	0	0
	1E Future Residents	- distance through residential land use designations (km)	0	0	0	0	0	0
	1F Future Resources	- length across Class 1 agricultural equivalent land (km)	1.0	0.5	1.0	1.0	1.0	1.0
	1G Existing Commercial and Industrial	- distance through commercial area (km)	0	0	0	0	0	0
		- distance through industrial areas (km)	0	0	0	0	0	0

Table J.3 Comparative Evaluation of Access Route Options: LF-8C Integrated

SITE AREA	FACTORS	INDICATORS	(1)	(2)	LF-8C (3)	(4)	(5)	(6)
ACCESS ROADS -								
	1H Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	0	0	0	0	0
		- distance through designated industrial areas (km)	0	0	0	0	0	0
LOCAL	I Physical & Biological Environment							
	IIA Hydrogeology	- length of sensitive lands crossed (m)	0	0	0	0	0	0
	IIB Stream Crossings	- number of stream crossings	1	0	1	1	1	1
		- stream crossing constraint rating	no constraint	no constraint	no constraint	no constraint	no constraint	no constraint
REGIONAL	I Human Environment							
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	90.5	99.6	83.6	84.6	67.3	76.8
		- distance to freeways	- 21.9 km to QEW	- 20.8 km to QEW	- 24.0 to QEW	- 28.6 km to QEW	- 28.3 to QEW	- 26.8 km to QEW
		- total number of level railway crossings	0	1	2	1	2	1
	IB Existing Residents	- distance through strip residential development (km)	- 4.5 km (Vineland)	- 4.5 km (Vineland) - 1.0 km (Boyle)	- 4.0 km (Beamsville) - 1.0 km (St. Anns) - 0.2 km (Bismarck)	- 1.9 km (Grimsby) -1.6 km (Smithville) - 0.2 km (Bismarck)	- 1.8 km (Grimsby) - 1.9 km (Smithville) - 0.2 km (Bismarck)	- 4.2 km (Grimsby/ Lincoln) - 1.6 km (Smithville) - 0.2 km (Bismarck)
		- estimated population along access roads*	257	433	431	360	636	388
		- number of communities by population	1- Vineland (1150)	1- Vineland (1150)	3 - Beamsville (5,000) St. Anns (75) - Bismarck (50)	3 - Grimsby (16,007) - Smithville (2,000) Bismarck (50)	3 - Grimsby (16,007) - Smithville (2,000) Bismarck (50)	3 - Grimsby (16,007) - Smithville (2,000) Bismarck (50)

* Includes populations listed under number of communities by population.

Table J.3 Comparative Evaluation of Access Route Options: LF-8C Integrated

SITE AREA	FACTORS	INDICATORS			LF-8C			
			(1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -								
REGIONAL	IC Existing Resources	- number of active farm complexes	20	28	49	50	58	48
		- sensitive crops ($000s)	1,797.9	2,035.7	2,090.0	738.0	1,158.4	1,252.7
		- livestock populations (000s)	285.4	224.0	1,392.8	615.4	886.3	605.1
	ID Existing Community & Recreation Features	- number and type of community and recreation features	9-conservation areas (2) - experimental farm - churches (3) - school - women's centre - campsite	9-experimental farm - churches (3) - school - conservation area - women's centre - campsite - Niagara Region Rd. Yard	9-seniors residence - parks (2) - synagogue - church - Bismark Kartway - schools (2) - cemetery	15-home for aged - police station - churches (6) - Niagara Region Rd. Yard - schools (2) - railway station - park - Bismark Kartway - post office	18-schools (4) - churches (6) - minigolf - halls (2) - park - Bismark Kartway - community centre/arena - cemetery - post office	18-homes for aged (2) - police station - churches (5) - legion - cemetery - schools (3) - Niagara Region Rd. Yard - railway station - park - Bismark Kartway - post office
	II Physical & Biological Environment							
	IIA Hydrogeology	- length of sensitive lands crossed (m)	4,300	4,300	2,200	3,000	2,350	3,900
	IIB Stream Crossings	- number of stream crossings - stream crossing constraint rating	16 major	15 major	12 moderate	17 moderate	22 moderate	23 moderate

Table J.4 Comparative Evaluation of Access Route Options: LF-9C Integrated

SITE AREA		FACTORS	INDICATORS	(1)	(2)	LF-9C (3)	(4)	(5)
ACCESS ROADS -								
LOCAL	1	Human Environment						
	1A	Transportation Safety	- proximity to arterial road	-	-	-	-	-
			- difficulty of access (number of level railway crossings)	-	-	-	-	-
	1B	Existing Residents	- number and size of population concentrations	-	-	-	-	-
			- number of residences (housing)	-	-	-	-	-
			- estimated population along access roads	-	-	-	-	-
			- distance through strip residential development (km)	-	-	-	-	-
	1C	Existing Resources	- number of active farm complexes	-	-	-	-	-
			- livestock populations along access routes (within 2 km band) (000s)	-	-	-	-	-
	1D	Existing Community and Recreation Features	- number and type - community features	-	-	-	-	-
			- number and type - recreation features	-	-	-	-	-
	1E	Future Residents	- distance through residential land use designations (km)	-	-	-	-	-
	1F	Future Resources	- length across Class I agricultural equivalent land (km)	-	-	-	-	-
	1G	Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	-	-	-	-
			- distance through industrial areas (km)	-	-	-	-	-

Table J.4 Comparative Evaluation of Access Route Options: LF-9C Integrated

SITE AREA	FACTORS	INDICATORS			LF-9C		
			(1)	(2)	(3)	(4)	(5)
ACCESS ROADS -							
LOCAL	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	-	-	-	-
		- distance through designated industrial areas (km)					
	II **Physical & Biological Environment**						
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	-	-	-
	IIB Stream Crossings	- number of stream crossings	-	-	-	-	-
		- stream crossing constraint rating	no constraint	no constraint	no constraint	no constraint	no constraint
REGIONAL	I **Human Environment**						
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	85.6	75.6	76.6	59.3	68.8
		- distance to freeways	21.7 km to QEW	- 21.2 km to QEW	- 25.8 km to QEW	- 25.5 km to QEW	- 24.0 km to QEW
		- total number of level railway crossings	0	2	1	2	1
		- number of intersections where a turn is required	1	6	8	3	6
	IB Existing Residents	- distance through strip residential development (km)	- 4.5 km (Vineland)	- 4.0 km (Beamsville) - 1.0 km (St. Anns) - 0.2 km (Bismarck)	- 1.9 km (Grimsby) - 1.6 km (Smithville) - 0.2 km (Bismarck)	- 1.8 km (Grimsby) - 1.9 km (Smithville) - 0.2 km (Bismarck)	- 4.2 km Grimsby/ Lincoln) - 1.6 km (Smithville) - 0.2 km (Bismarck)
		- number of communities by population	1 - Vineland (1150)	3 - Beamsville, (5000) - St. Anns (75) - Bismarck (50)	3 - Grimsby (16,007) - Smithville (2,000) - Bismarck (50)	3 - Grimsby (16,007) - Smithville (2,000) - Bismarck (50)	3 - Grimsby (16,007) - Smithville (2,000) - Bismarck (50)
		- estimated population along access routes *	271	407	335	611	369

* excludes populations listed under number of communities by population

Table J.4 Comparative Evaluation of Access Route Options: LF-9C Integrated

SITE AREA		FACTORS	INDICATORS	LF-9C				
				(1)	(2)	(3)	(4)	(5)
ACCESS ROADS -								
REGIONAL	IC	Existing Resources	- number of active farm complexes	22	44	45	53	43
			- sensitive crops ($000s)	1,813.3	2,051.6	699.6	1,027.2	1,214.2
			- livestock populations (000s)	301.2	1,353.3	575.8	681.2	565.5
	ID	Existing Community & Recreation Features	- number and type of community and recreation features	9-experimental farm - churches (3) - conservation areas (2) - school - women's centre - campsite	9-home for aged - parks (2) - synagogue - chruch - Bismarck Kartway - schools (2) - cemetery	15-home for aged - police station - churches (6) - Niagara Region Rd. Yard - schools (2) - railway station (possibly historic) - park - Bismarck Kartway - post office	18-schools (4) - churches (6) - minigolf - halls (2) - park - post office - Bismarck Kartway - community centre/arena - cemetery	18-homes for aged (2) - police station - churches (5) - schools (3) - legion - cemetery - railway station (possibly historic) - Niagara Region Rd. Yard - park - Bismarck Kartway - post office
	II	Physical & Biological Environment						
	IIA	Hydrogeology	- length of sensitive lands crossed (m)	4,300	2,200	3,000	2,350	3,900
	IIB	Stream Crossings	- number of stream crossings	18	11	16	21	22
			- stream crossing constraint rating	major	moderate	moderate	moderate	moderate

Table J.5 Comparative Evaluation of Access Route Options: LF-1E Integrated   Page 1 of 4

SITE AREA	FACTORS	INDICATORS	LF-1E (Integrated) (1)	 (2)	 (3)
ACCESS ROADS -					
LOCAL	I Human Environment				
	IA Transportation Safety	- proximity to arterial road	0 km	1.7 km	0 km
		- difficulty of access (number of level railway crossings)	0	0	-
	IB Existing Residents	- number and size of population concentrations	-	0	-
		- number of residences (housing)	-	8	-
		- estimated population along road access	-	23	-
		- distance through strip residential development (km)	-	0	-
	IC Existing Resources	- number of active farm complexes	-	3	-
		- livestock populations along access routes (within 2 km band) (000s)	-	12.6	-
	ID Existing Community and Recreation Features	- number and type - community features	-	0	-
		- number and type - recreation features	-	0	-

Table J.5 Comparative Evaluation of Access Route Options: LF-1E Integrated

SITE AREA	FACTORS	INDICATORS		LF-1E	(Integrated)
			(1)	(2)	(3)
ACCESS ROADS -	IE Future Residents	- distance through residential land use designations (km)	-	0	-
	IF Future Resources	- length across Class 1 agricultural equivalent land (km)	-	1.3	-
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	0	-
		- distance through industrial areas (km)	-	0	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	0	-
		- distance through designated industrial areas (km)	-	0	-
	II Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	-
	IIB Stream Crossings	- number of stream crossings	-	1	-
		- stream crossing constraint rating	no constraint	no constraint	no constraint
	I Human Environment				
REGIONAL	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	44.7	15.4	26.9

Table J.5 Comparative Evaluation of Access Route Options: LF-1E Integrated

SITE AREA	FACTORS	INDICATORS	LF-1E (Integrated) (1)	 (2)	 (3)
ACCESS ROADS -					
		- distance to freeways	- 13.6 km to 406 (existing)	- 3.6 km to QEW	- 5.5 km to 406 (proposed)
		- total number of level railway crossings	2	0	2
		- number of intersections where a turn is required	4	2	0
	IB Existing Residents	- distance through strip residential development (km)	- 7.0 km (Welland) (mixed uses)	0	- 0.5 km (Welland)
		- estimated population along access routes*	90	12	90
		- number of communities by population	- Welland (45,417)	0	0
	IC Existing Resources	- number of active farm complexes	0	0	0
		- sensitive crops ($000s)	42.6	13.3	42.6
		- livestock populations (000s)	7.7	17.3	7.7
	ID Existing Community & Recreation Features	- number and type of community and recreation features	34 - exhibition - minigolf - cemeteries (2) - schools (2) - churches (6) - college - government buildings (6) - temple club	1 - Hungarian Cultural Centre	3 - park - fire station - hall

* excludes populations listed under number of communities by population.

Table J.5 Comparative Evaluation of Access Route Options: LF-1E Integrated

SITE AREA	FACTORS	INDICATORS	LF-1E (Integrated) (1)	(2)	(3)
ACCESS ROADS -			- post office - halls (3) - salvation army - park - fire stations (2) - YMCA - heritage council and multi-cultural centre - temple - shopping plazas (3)		
	II Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	900	150	900
	IIB Stream Crossings	- number of stream crossings	5	1	2
		' stream crossing constraint rating	major	no constraint	no constraint

Table J.6 Comparative Evaluation of Selected Access Route Options: LF-3E

Page 1 of 4

SITE AREA	FACTORS	INDICATORS		LF-3E (Integrated)	
			(1)	(2)	(3)
ACCESS ROADS -					
LOCAL	I Human Environment				
	IA Transportation Safety	- proximity to arterial road	0 km	0 km	0 km
		- difficulty of access (number of level railway crossings)	0	0	0
	IB Existing Residents	- number and size of population concentrations	-	-	-
		- number of residences (housing)	-	-	-
		- estimated population along access roads	-	-	-
		- distance through strip residential development (km)	-	-	-
	IC Existing Resources	- number of active farm complexes	-	-	-
		- livestock populations along access routes (within 2 km band) (000s)	-	-	-
	ID Existing Community and Recreation Features	- number and type - community features	-	-	-
		- number and type - recreation features	-	-	-

Table J.6 Comparative Evaluation of Selected Access Route Options: LF-3E

SITE AREA	FACTORS	INDICATORS	(1)	LF-3E (2)	(Integrated) (3)
ACCESS ROADS -					
	IE Future Residents	- distance through residential land use designations (km)	-	-	-
	IF Future Resources	- length across Class 1 agricultural equivalent land (km)	-	-	-
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	-	-
		- distance through industrial areas (km)	-	-	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	-	-
		- distance through designated industrial areas (km)	-	-	-
	II Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	-
	IIB Stream Crossings	- number of stream crossings	-	-	-
		- stream crossing constraint rating	-	-	-

Table J.6 Comparative Evaluation of Selected Access Route Options: LF-3E

SITE AREA	FACTORS	INDICATORS	(1)	LF-3E (Integrated) (2)	(3)
ACCESS ROADS -					
REGIONAL	I **Human Environment**				
	IA Transportation	- transportation accident frequency (accidents/million vehicles)	64.5	9.0	46.6
		- distance to freeways	- 18.2 km to 406 (existing)	- 2.1 km to QEW	- 10.1 km to 406 (proposed)
		- total number of level railway crossings	3	0	2
		- number of intersections where a turn is required	6	0	2
	IB Existing Residents	- distance through strip residential development (km)	- 7.0 km (Welland) (mixed uses)	0	- 0.5 km (Welland)
		- estimated population along access routes *	112	9	112
		- number of communities by population	- Welland (45,417)	none	none
	IC Existing Resources	- number of active farm complexes	5	0	5
		- sensitive crops ($000s)	81.3	8.0	81.3
		- livestock populations (000s)	22.7	10.4	22.7

* excludes populations listed under number of communities by population.

Table J.6 Comparative Evaluation of Selected Access Route Options: LF-3E

SITE AREA	FACTORS	INDICATORS	(1)	LF-3E (2)	(Integrated) (3)
ACCESS ROADS -					
	ID Existing Community & Recreation Features	- number and type of community and recreation features	33 - exhibition - minigolf - cemeteries (2) - schools (2) - churches (6) - college - government buildings (6) - temple club - post office - halls (3) - salvation army - park - fire station - YMCA - heritage council and multi-cultural centre - shopping plazas (3) - temple	1 - Hungarian Cultural Centre	2 - hall - park
	II Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	1100	-	900
	IIB Stream Crossings	- number of stream crossings	9	0	6
		- stream crossing constraint rating	major constraint	no constraint	moderate constraint

Table J.7 Comparative Evaluation of Access Road Options: LF-2H/PI-1A1

SITE AREA	FACTORS	INDICATORS	TO PI-1A1			
			(1)	(2)	(3)	(4)
ACCESS ROADS						
LOCAL	I **Human Environment**					
	IA Transportation Safety	- proximity to arterial road	0 km	0 km	0 km	0 km
		- difficulty of access (number of level railway crossings on local roads)	0	0	0	0
	IB Existing Residents	- number and size of population concentrations	-	-	-	-
		- number of residences (housing)	-	-	-	-
		- estimated population along access roads	-	-	-	-
		- distance through strip residential development (km)	-	-	-	-
	IC Existing Resources	- number of active farm complexes	-	-	-	-
		- livestock populations - along access routes (within 2 km band) (000s)	-	-	-	-
	ID Existing Community and Recreation Features	- number and type - community features	-	-	-	-
		- number and type - recreation features	-	-	-	-

Table J.7 Comparative Evaluation of Access Road Options: LF-2W/PI-1A1

SITE AREA	FACTORS	INDICATORS	TO PI-1A1 (1)	(2)	(3)	(4)
ACCESS ROADS -						
LOCAL	IF Future Resources	- length across Class I agricultural equivalent land (km)	-	-	-	-
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	-	-	-
		- distance through industrial areas (km)	-	-	-	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	-	-	-
		- distance through designated industrial areas (km)	-	-	-	-
	II Physical & Biological Environment					
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	-	-
	IIB Stream Crossings	- number of stream crossings	-	-	-	-
		- stream crossing constraint rating	-	-	-	-

Table J.7 Comparative Evaluation of Access Road Options: LF-2W/PI-1A1

SITE AREA	FACTORS	INDICATORS	TO PI-1A1 (1)	(2)	(3)	(4)
ACCESS ROADS -						
REGIONAL I	**Human Environment**					
	IA Transportation Safety	- transportation accident frequency (accident/million vehicles)	73.8	73.8	62.2	62.2
		- distance to freeways (km)	- 19.0 km to 401	- 19.0 km to 401	- 14.5 km to 410	- 14.5 km to 410
		- total number of level railway crossings	1	1	1	1
		- number of intersection where a turn is required	1	4	1	3
	IB Existing Residents	- distance through strip residential development (km)	3 km (Malton)	0	3 km (Malton)	0
		- number of communities by population	2 - Derry West (110) - Malton (32,750)	1 - Derry West (110)	1- Malton (32,750)	0
		- estimated population along access routes*	117	128	46	83
	IC Existing Resources	- number of active farm complexes	8	9	3	4
		- sensitive crops ($000s)	114.6	166.4	101.6	153.4
		- livestock populations (000s)	1.7	1.7	1.4	1.3

*Note: Population estimates along access road includes portions of population in the population concentrations.

Table J.7 Comparative Evaluation of Access Road Options: LF-2N/PI-1A1

SITE AREA	FACTORS	INDICATORS	TO PI-1A1			
			(1)	(2)	(3)	(4)
ACCESS ROADS -						
	ID Existing Community & Recreation Features	- number and type of community and recreation features	14 - Hansa Haus - cemeteries (5) - public works yard - skeet club - parkland - post office - school - church - driver exam centre - Century Farm	9 - Hansa Haus - cemeteries (3) - public works yard - ethnic club - Century Farm - banquet hall - parkland	11 - cemeteries (4) - parkland - skeet club - post office - school - church - driver exam centre - Century Farm	6 - cemeteries (2) - ethnic club - banquet hall - Century Farm - parkland
REGIONAL	II Physical & Biological Environment					
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	-	-
	IIB Stream Crossings	- number of stream crossings	28	34	24	30
		- stream crossing constraint rating	moderate	moderate	moderate	moderate

Table J.8 Comparative Evaluation of Access Road Options: PI-1A1/LF-2N

Page 1 of 4

SITE AREA	FACTORS	INDICATORS	PI 1A1 TO LF-2N (1)	(2)
ACCESS ROADS - LOCAL	I **Human Environment**			
	IA Transportation Safety	- proximity to arterial road	N/A	N/A
		- difficulty of access (number of level rail crossings)	N/A	N/A
	IB Existing Residents	- number and size of population concentrations	-	-
		- number of residences (housing)	-	-
		- estimated population along access roads	-	-
		- distance through strip residential development (km)	-	-
	IC Existing Resources	- number of active farm complexes	-	-
		- livestock populations along access routes (within 2 km) (000s)	-	-
	ID Existing Community and Recreation Features	- number and type - community features	-	-
		- number and type - recreation features	-	-
	IE Future Residents	- distance through residential land use designations (km)	-	-

Table J.8 Comparative Evaluation of Access Road Options: PI-1A1/LF-2M

SITE AREA	FACTORS	INDICATORS	PI-1A1 to LF-2M	
			(1)	(2)
ACCESS ROADS -				
LOCAL	IF Future Resources	- length across Class I agricultural equivalent land (km)	-	-
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	-
		- distance through industrial areas (km)	-	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	-
		- distance through designated industrial areas (km)	-	-
	II Physical & Biological Environment			
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-
	IIB Stream Crossing	- number of stream crossings	-	-
		- stream crossing constraint rating	-	-

Table J.8 Comparative Evaluation of Access Road Options: PI-1A1/LF-2N

SITE AREA	FACTORS	INDICATORS	PI-1A1 TO LF-2N	
			(1)	(2)
ACCESS ROADS -				
REGIONAL I	Human Environment			
	IA Transportation Safety	- transportation accident frequency (accident/ million vehicles)	64.4	64.4
		- distance to freeways	N/A	N/A
		- total number of level railway crossings	1	1
		- number of intersections where a turn is required	1	3
REGIONAL	IB Existing Residents	- distance through strip residential development (km)	3 km (Malton)	0
		- number of communities by population	1- Malton (32,750)	0
		- estimated population along access routes*	53	66
	IC Existing Resources	- number of active farm complexes	3	5
		- sensitive crops ($000s)	102.9	149.0
		- livestock populations (000s)	1.4	1.3

*Note: Population estimates along access road includes portions of population in the population concentration.

Table J.8 Comparative Evaluation of Access Road Options: PI-1A1/LF-2M

SITE AREA	FACTORS	INDICATORS	PI-1A1 TO LF-2M	
			(1)	(2)
ACCESS ROADS -				
	ID Existing Community and Recreation Features	- number and type of community and recreation features	11 - cemeteries (4) - skeet club - parkland - school - church - Century Farm - driver exam centre - post office	6 - Century Farm - cemeteries (2) - hall - parkland - ethnic club
REGIONAL	I Human Environment			
	II Physical & Biological Environment			
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-
	IIB Stream Crossings	- number of stream crossings	26	33
		- stream crossing constraint rating	moderate	moderate

Table J.9 Comparative Evaluation of Access Road Options: PI-13H

SITE AREA	FACTORS	INDICATORS	TO PI-13H (1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -								
LOCAL	I Human Environment							
	IA Transportation Safety	- proximity to arterial road	0,4 km	0,4 km	0,4 km	0,4 km	0,4 km	0,4 km
		- difficulty of access (number of level railway crossings)	-	-	-	-	-	-
	IB Existing Residents	- number and size of population concentrations	0	0	0	0	0	0
		- number and residences (housing)	26	22	1	1	1	1
		- estimated population along access roads	84	71	4	4	4	4
		- distance through strip residential development (km)	0	0	0	0	0	0
	IC Existing Resources	- number of active farm complexes	6	2	1	1	1	1
		- livestock populations along access routes (within 2 km band) (000s)	0,6	0,6	0,3	0,3	0,3	0,3
	ID Existing Community and Recreation Features	- number and type - community features	1 - Century Farm	1 - Century Farm	0	0	0	0
		- number and type - recreation features	0	0	0	0	0	0

Table J.9 Comparative Evaluation of Access Road Options: PI-13W

SITE AREA	FACTORS	INDICATORS	TO PI-13W (1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -								
LOCAL	I Human Environment							
	IE Future Residents	- distance through residential land use designations (km)	0	0	0	0	0	0
	IF Future Resources	- length across Class I agricultural equivalent land (km)	3.7	3.7	0.5	0.5	0.5	0.5
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	0	0	0	0	0	0
		- distance through industrial areas (km)	0	0	0	0	0	0
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	0	0	0	0	0
		- distance through designated industrial areas (km)	0	0	0	0	0	0
	II Physical & Biological Environment							
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	200	-	-	-	-
	IIB Stream Crossings	- number of stream crossings	6	5	2	2	2	2
		- stream crossing constraint rating	major	minor	no constraint	no constraint	no constraint	no constraint

Table J.9 Comparative Evaluation of Access Road Options: PI-13M

SITE AREA	FACTORS	INDICATORS	TO PI-13M (1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -								
REGIONAL	I Human Environment							
	IA Transportation Safety	- transportation accident frequency (accidents/ million vehicles)	33,0	33,5	38,6	53,2	63,9	34,8
		- distance to freeways (km)	- 7,7 km to 401	- 7,8 km to 401	- 9,0 km to 401	- 12,4 km to 403	- 14,9 km to QEW	- 16,4 km to QEW
		- total number of level railway crossings	1	1	1	0	0	0
		- number of intersections where a turn is required	2	2	2	2	2	0
	IB Existing Residents	- distance through strip residential development (km)	- 0,6 km (Omagh)	0	- 0,5 km (Drumquin)	- 0,5 km (Drumquin) - 0,6 km (Paradise Subdivision)	- 0,5 km (Drumquin) - 2,0 km (Oakville)	- 1,7 km (Palermo) - 0,6 km (Omagh)
		- number of communities by population	1 - Omagh (30)	1 - Omagh (30)	2 - Agerton (<25) - Drumquin (<25)	2 - Drumquin (<25) - Paradise Subdivision	2 - Oakville (76,720) - Drumquin (<25)	- Palermo (200) - Omagh (30) - Boyne (< 25)
		- estimated population along access routes *	20	13	173	157	231	413
	IC Existing Resources	- number of active farm complexes	6	3	15	7	15	22
		- sensitive crops ($000s)	69,3	74,2	170,9	690,0	543,7	92,9
		- livestock populations (000s)	0,6	0,5	1,1	1,1	3,0	24,5

*Note: estimated population includes portion of population in population concentrations.

Table J.9 Comparative Evaluation of Access Road Options: PI-13N

SITE AREA	FACTORS	INDICATORS	TO PI-13N (1)	(2)	(3)	(4)	(5)	(6)
ACCESS ROADS -								
	10 Existing Community & Recreation Features	- number and type of community and recreation features	0	0	5 - Church and cemetery - golf course - park - school - horse boarding/ riding	2 - park - school	14 - municipal centre - mall - churches (2) - college - memorial hall - church site - coast guard depot - schools (2) - maintenance yard - parks and recreation operation centre - health clinic - park	10 - provincial park - Halton Regional offices - golf club - parks (2) - scenic trail/ riding - community centre - church and cemetery (2) - MTC patrol
REGIONAL	11 Physical & Biological Environment							
	11A Hydrogeology	- length of sensitive lands crossed (m)	—	—	5,600	2,650	2,950	1,650
	11B Stream Crossings	- number of stream crossings	1	2	8	21	14	18
		- stream crossing constraint rating	no constraint	minor	major	major	major	major

Table J.10 Comparative Evaluation of Access Route Options: PI-13N to LF-2N

SITE AREA	FACTORS	INDICATORS	PI-13N TO LF-2N (1)	(2)	(3)
ACCESS ROADS -					
LOCAL	I Human Environment				
	IA Transportation Safety	- proximity to arterial road	N/A	N/A	N/A
		- difficulty of access (number of level rail crossings)	N/A	N/A	N/A
	IB Existing Residents	- number and size of population concentrations	0	0	0
		- number of residences (housing)	1	26	22
		- estimated population along access roads	4	84	71
		- distance through strip residential development (km)	0	0	0
	IC Existing Resources	- number of active farm complexes	1	6	2
		- livestock populations along access routes (within 2km band) (000s)	0.3	0.6	0.6
	ID Existing Community and Recreation Features	- number and type - community features	0	1- Century Farm	1- Century Farm
		- number and type - recreation features	0	0	0

Table J.10 Comparative Evaluation of Access Route Options: PI-13N to LF-2N

SITE AREA	FACTORS	INDICATORS	PI-13N TO LF-2N (1)	(2)	(3)
ACCESS ROADS -					
LOCAL	I Human Environment				
	IE Future Residents	- distance through residential land use designations (km)	0	0	0
	IF Future Resources	- length across Class I agricultural equivalent land (km)	0.3	3.7	3.7
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	0	0	0
		- distance through industrial areas (km)	0	0	0
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	0	0
		- distance through industrial areas (km)	0	0	0
LOCAL	II Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	200
	IIB Stream Crossings	- number of stream crossings	0	6	5
		- stream crossing constraint rating	no constraint	major	major

Table J.10 Comparative Evaluation of Access Route Options: PI-13N to LF-2N

SITE AREA	FACTORS	INDICATORS	PI-13N TO LF-2N (1)	(2)	(3)
ACCESS ROADS -					
REGIONAL I	Human Environment				
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	50.9	48.4	48.9
		- distance to freeways	N/A	N/A	N/A
		- total number of level railway crossings	1	1	1
		- number of intersections where a turn is required	2	2	2
	IB Existing Residents	- distance through strip residential development (km)	- 0.5 km (Drumquin)	- 0.3 km (Omagh)	0
		- number of communities by population	3- Derry West (110) - Agerton (<25) - Drumquin (<25)	2- Omagh (30) - Derry West (110)	1- Derry West (110)
		-*estimated population along access roads	247	52	39

*Note: population estimated along access roads include portions of population listed in population concentrations.

Table J.10 Comparative Evaluation of Access Route Options: PI-13N to LF-2N

SITE AREA	FACTORS	INDICATORS	PI-13N TO LF-2N		
			(1)	(2)	(3)
ACCESS ROADS -					
REGIONAL I	Human Environment				
	IC Existing Resources	- number of active farm complexes	19	9	6
		- sensitive crops ($000s)	183.6	72.0	76.9
		- livestock populations (000s)	1.2	0.7	0.6
	ID Existing Community & Recreation Features	- number and type of community and recreation features	6 - Hansa Haus - golf course - church & cemetery - horse stables - school - park	1 - Hansa Haus	1 - Hansa Haus
REGIONAL II	Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	5,600	0	0
	IIB Stream Crossings	- number of stream crossings	13	3	4
		- stream crossing constraint rating	major	no constraint	no constraint

Table J.11 Comparative Evaluation of Access Road Options: LF-3W/P1-1N

SITE AREA	FACTORS	INDICATORS	TO P1-1N (1)	(2)	(3)	(4)	(5)	(6)	(7)
ACCESS ROADS									
LOCAL	I Human Environment								
	IA Transportation Safety	- proximity to arterial road	0 km	0 km	0 km	0 km	0 km	0 km	0 km
		- difficulty of access (number of level railway crossings)	0	0	0	0	0	0	-
	IB Existing Residents	- number and size of population concentrations	0	-	-	-	-	-	-
		- number of residences (housing)	15	-	25	-	-	-	-
		- estimated population along access roads	48	-	80	-	-	-	-
		- distance through strip residential development (km)	2.5 km (Milton)	-	0	-	-	-	-
	IC Existing Resources	- number of active farm complexes	3	-	6	-	-	-	-
		- livestock populations along access routes (within 2 km band) (000s)	14.1	-	0.4	-	-	-	-
	ID Existing Community and Recreation Features	- number and type - community features	1 - Milton District Hospital	-	1 - Century Farm	-	-	-	-
		- number and type - recreation features	0	-	0	-	-	-	-

Table J.11 Comparative Evaluation of Access Road Options: LF-2N/P1-1N

SITE AREA	FACTORS	INDICATORS	TO P1-1N						
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
ACCESS ROADS -									
LOCAL	IE Future Residents	- distance through residential land use designations (km)	2.5 km	-	0.6 km (Parkway belt)	-	-	-	-
	IF Future Resources	- length across Class I agricultural equivalent land (km)	6.3	-	2.9	-	-	-	-
	IG Existing Commercial	- distance through commercial areas (km)	0	-	0	-	-	-	-
		- distance through industrial areas (km)	0.75 km	-	0	-	-	-	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	-	0	-	-	-	-
		- distance through designated industrial areas (km)	0.75 km	-	0	-	-	-	-
	II **Physical & Biological Environment**								
	IIA Hydrogeology	- length of sensitive lands crossed (m)	400	-	0	-	-	-	-
	IIB Stream Crossings	- number of stream crossings	4	-	4	-	-	-	-
		- stream crossing constraint rating	minor	-	major	-	-	-	-

Table J.11 Comparative Evaluation of Access Road Options: LF-2W/PI-1N

SITE AREA	FACTORS	INDICATORS	TO PI-1N (1)	(2)	(3)	(4)	(5)	(6)	(7)
ACCESS ROADS -									
REGIONAL 1	**Human Environment**								
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	31.0	42.2	36.9	53.6	68.6	78.9	12.5
		- distance to freeways (km)	- 8.1 km to 401	- 10.7 km to 401	- 8.6 km to 401	- 12.5 km to 401	- 16.0 km to 403	- 18.4 km to QEW	- 10.4 to QEW
		- total number of level railway crossings	2	2	1	1	0	0	0
		- number of intersections where a turn is required	2	3	1	1	1	1	0
	IB Existing Residents	- distance through strip residential development (km)	0	- 0.5 (Steeles Ave./ CP Rail)	- 0.3 km (Omagh)	- 0.5 km (Drumquin) - 0.6 km (Omagh)	- 0.5 km (Drumquin) - 0.6 km (Omagh) - 0.6 km (Paradise Subdivision)	- 2 km (Oakville) - 0.6 km (Omagh) - 0.5 km (Drumquin)	- 1.7 km (Palermo)
		- number of communities by population	1-Milton (29,591)	1-Milton (29,591)	2-Omagh (30) - Boyne (<25)	4 -Agerton (<25) -Drumquin (<25) -Omagh (30) -Boyne (<25)	4-Boyne (<25) -Drumquin (<25) -Omagh (30) -Paradise Subdivision	4-Boyne (<25) - Drumquin (<25) - Omagh (30) - Oakville (76,720)	1 - Palermo (200)
		- estimated population along access routes*	0	173	55	276	186	565	282
	IC Existing Resources	- number of active farm complexes	0	10	7	17	15	22	13
		- sensitive crops ($000s)	27.6	112.1	82.4	237.6	743.6	595.6	62.4
		- livestock populations (000s)	9.9	71.5	2.5	3.6	3.7	5.4	20.2

Table J.11 Comparative Evaluation of Access Road Options: LF-2W/PI-IN

SITE AREA		FACTORS	INDICATORS	TO PI-IN (1)	(2)	(3)	(4)	(5)	(6)	(7)
ACCESS ROADS -										
REGIONAL	IU	Existing Community & Recreation Features	- number and type of community and recreation features	5 - cemetery - police station - chamber of commerce - park - correctional centre	6 - correctional centre - park - police station - hall - chamber of commerce - Century Farm	4 - church and cemetery (2) - park - community centre	9 - golf course - church & cemetery (3) - horse riding - school - park (2) - community centre	6 - parks (2) - school - church and cemetery (2) - community centre	18- mall - municipal office - churches (2) - college - memorial hall - church site - Coast Guard depot - schools (2) - maintenance yard - health clinic - park (2) - community centre - cemeteries (2) - parks and recreation operations centre	6 - scenic trail - MTC Patrol - park - golf club - Halton Regional Offices - provincial park
	II	Physical & Biological Environment								
	IIA	Hydrogeology	- length of sensitive lands crossed (m)	0	350	250	5,850	2,650	2,950	1,400
	IIB	Stream Crossings	- number of stream crossings	4	15	4	16	19	22	12
			- stream crossing constraint rating	major	moderate	moderate	major	major	major	major

Table J.12 Comparative Evaluation of Access Route Options: PI-1M to LF-2M

SITE AREA	FACTORS	INDICATORS	PI-1M TO LF-2M (1)	(2)	(3)	(4)
ACCESS ROADS -						
LOCAL	I **Human Environment**					
	IA Transportation Safety	- proximity to arterial road	N/A	N/A	N/A	N/A
		- difficulty of access (number of level railway crossings)	N/A	N/A	N/A	N/A
	IB Existing Residents	- number and size of population concentrations	-	-	-	-
		- number and residences (housing)	-	25	15	-
		- estimated population along access roads	-	80	48	-
		- distance through strip residential development (km)	-	0	2.5 km (Milton)	-
	IC Existing Resources	- number of active farm complexes	-	6	3	-
		- livestock populations along access routes (within 2 km band) (000s)	-	0.4	14.1	-
	ID Existing Community and Recreation Features	- number and type - community features	-	1 - Century Farm	1 - Milton District Hospital	-
		- number and type - recreation features	-	-	-	-

Table J.12 Comparative Evaluation of Access Route Options: PI-1N to LF-2N

SITE AREA	FACTORS	INDICATORS	PI-1N TO LF-2N (1)	(2)	(3)	(4)
ACCESS ROADS -						
LOCAL	I Human Environment					
	IE Future Residents	- distance through residential land use designations (km)	-	0.6 km (Parkway Belt)	2.5 km	-
	IF Future Resources	- length across Class I agricultural equivalent land (km)	-	2.9	6.3	-
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	0	0	-
		- distance through industrial areas (km)	-	0	0.75 km	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	0	0	-
		- distance through designated industrial areas (km)	-	0	0.75 km	-
	II Physical & Biological Environment					
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-		400	-
	IIB Stream Crossing	- number of stream crossings	-	4	4	-
		- stream crossing constraint rating	-	major	minor	-

Table J.12 Comparative Evaluation of Access Route Options: PI-1N to LF-2N

			PI-1N TO LF-2N			
SITE AREA	FACTORS	INDICATORS	(1)	(2)	(3)	(4)
ACCESS ROADS -						
REGIONAL I	Human Environment					
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	63.8	52.3	49.2	60.4
		- distance to freeways (km)	N/A	N/A	N/A	N/A
		- total number of level railway crossings	1	1	2	2
		- number of intersections where a turn is required	1	1	2	3
	IB Existing Residents	- distance through strip residential development (km)	- 0.5 km (Drumquin) - 0.6 km (Omagh)	- 0.3 km (Omagh)	0	- 0.5 km (Steeles Ave./CP Rail)
		- number of communities by population	5 - Agerton (<25) - Drumquin (<25) - Omagh (30) - Boyne (<25) - Derry West (110)	3 - Omagh (30) - Boyne (<25) - Derry West (110)	2 - Milton (29,591) - Derry West (110)	2 - Milton (29,951) - Derry West (110)
		- estimated population along access routes*	308	183	80	207
	IC Existing Resources	- number of active farm complexes	20	10	3	13
		- sensitive crops ($000s)	240.3	85.1	13.5	114.8
		- livestock populations (000s)	1.8	2.6	4.0	71.6

* **Note:** Population concentration along access roads includes a portion of population in population concentrations

Table J.12 Comparative Evaluation of Access Route Options: PI-1N to LF-2N

SITE AREA	FACTORS	INDICATORS	PI-1N TO LF-2N (1)	(2)	(3)	(4)
ACCESS ROADS -						
REGIONAL	ID Existing Community & Recreation Features	- number and type of community and recreation features	10 - community centre - church and cemetery (3) - park (2) - school - horse riding - golf course - Hansa Haus	5 - Hansa Haus - church and cemetery (2) - park - community centre	8 - Hansa Haus - correctional centre - park - police station - Chamber of Commerce - cemetery - plaza - YMCA	7 - Hansa Haus - correctional centre - park - police station - Chamber of Commerce - hall - Century Farm
	II Physical & Biological Environment					
	IIA Hydrogeology	- length of sensitive lands crossed (m)	5,850	250	-	350
	IIB Stream Crossings	- number stream crossings	13	9	6	17
		- stream crossing constraint rating	major	major	major	moderate

TR-12/
J-13.1

Table J.13 Comparative Evaluation of Access Road Options: LF-1C

SITE AREA	FACTORS	INDICATORS	TO LF-1C		
			(1)	(2)	(3)
ACCESS ROADS					
LOCAL	I Human Environment				
	IA Transportation Safety	- proximity to arterial road	0.8 km	0.8 km	0.8 km
		- difficulty of access (number of level railway crossings)	1	1	1
	IB Existing Residents	- number and size of population concentrations	-	-	-
		- number of residences (housing)	1	1	1
		- estimated population along access roads	4	10	10
		- distance through strip residential development (km)	0	0	0
	IC Existing Resources	- number of active farm complexes	0	0	0
		- livestock populations along access routes (within 2 km band) (000s)	9.8	9.8	9.8
	ID Existing Community and Recreation Features	- number and type - community features	0	0	0
		- number and type - recreation features	0	0	0

Table J.13 Comparative Evaluation of Access Road Options: LF-1C

SITE AREA	FACTORS	INDICATORS	TO LF-1C		
ACCESS ROADS			(1)	(2)	(3)
LOCAL	I Human Environment				
	IE Future Residents	- distance through residential land use designations (km)	0	0	0
	IF Future Resources	- length across class 1 agricultural equivalent land/(km)	0.5	0.8	0.8
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	0	0	0
		- distance through industrial areas (km)	0	0	0
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	0	0
		- distance through designated industrial areas (km)	0	0	0
	Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	0	0	0
	IIB Stream Crossings	- number of stream crossings	0	0	0
		- stream crossing constraint rating	no constraint	no constraint	no constraint

Table J.13 Comparative Evaluation of Access Road Options: LF-1C

SITE AREA	FACTORS	INDICATORS	TO LF-1C (1)	(2)	(3)
ACCESS ROADS					
REGIONAL	I Human Environment				
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	151.6	57.1	75.0
		- distance to freeways	- 32.9 km to QEW	- 16.3 km to 406 (proposed)	- 24.4 km to 406 (existing)
		- total number of level railway crossings	4	2	3
		- number of intersections where a turn is required	3	7	11
	IB Existing Residents	- distance through strip residential development (km)	- 4.5 km (Vineland) - 1.5 km (Beckett's Bridge) - 1.0 km (near site)	- 0.5 km (Welland) - 1.0 km (R.R. 23)	- 7.0 km (Welland) - 1.0 km (R.R. 23)
		- number of communities by population	1 - Vineland (1,150)	0	1 - Welland (45,417)
		- estimated population along access roads *	546	196	196
	IC Existing Resources	- number of active farm complexex	45	15	15
		- sensitive crops ($000s)	2277.5	116.5	116.5
		- livestock populations (000s)	364.5	23.8	23.8

* **Note** - estimated population along access roads includes portion of population in population concentrations

Table J.13 Comparative Evaluation of Access Road Options: LF-1C

SITE AREA	FACTORS	INDICATORS	TO LF-1C (1)	(2)	(3)
ACCESS ROADS					
	ID Existing Community & Recreation Features	- number and type of community and recreation features	11 - experimental farm - churches (4) - school - conservation area - women's centre - campsite - golf and country club - road maintenance yard	2 - Hunt Club - Welland Feeder Canal	33 - Hunt Club - exhibition - mini golf - shopping centre (3) - cemeteries (2) - schools (2) - churches (6) - college - post office - government buildings (6) - temple - multicultural centre - Salvation Army - halls (2) - fire station - YMCA - temple club - Welland Feeder Canal
REGIONAL	II Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	4,900	5,100	5,200
	IIB Stream Crossings	- number of stream crossings	18	3	6
		- stream crossing constraint rating	major	moderate	major

TR-12/
J-14.1

Table J.14 Comparative Evaluation of Access Road Options: P1-18E

Page 1 of 4

SITE AREA	FACTORS	INDICATORS	TO P1-18E (1)	(2)
ACCESS ROADS				
LOCAL	I **Human Environment**			
	IA Transportation Safety	- proximity to arterial road	0 km	0 km
		- difficulty of access (number of level railway crossings)	0	0
	IB Existing Residents	- number and size of population concentrations	-	-
		- number and residences (housing)	-	-
		- estimated population along access roads	-	-
		- distance through strip residential development (km)	-	-
	IC Existing Resources	- number of active farm complexes	-	-
		- livestock populations along access routes (within 2 km band) (000s)	-	-
	ID Existing Community and Recreation Features	- number and type - community features	-	-
		- number and type - recreation features	-	-
	IE Future Residents	- distance through residential land use designations (km)	-	-

Table J.14 Comparative Evaluation of Access Road Options: PI-18E

SITE AREA	FACTORS	INDICATORS	TO PI-18E (1)	(2)
ACCESS ROADS -				
LOCAL	I Human Environment			
	IF Future Resources	- length across Class I agricultural equivalent land (km)	-	-
	IG Existing Commercial and Industrial Uses	- distance through commercial area (km)	-	-
		- distance through industrial areas (km)	-	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	-
		- distance through designated industrial areas (km)	-	-
	II Physical & Biological Environment			
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-
	IIB Stream Crossings	- stream crossing constraint rating	-	-
REGIONAL	I Human Environment			
	IA Transportation Safety	- transportation accident frequency (accidents/ million vehicles)	11.4	29.3
		- distance to freeways (km)	- 3.4 km to 406 (proposed)	- 11.5 km to 406 (existing)
		- total number of level railway crossings	0	1
		- number of intersections where a turn is required	1	5

Table J.14 Comparative Evaluation of Access Road Options: PI-18E

SITE AREA	FACTORS	INDICATORS	TO PI-18E	
			(1)	(2)
ACCESS ROADS -				
REGIONAL	IB Existing Residents	- distance through strip residential development (km)	- 0.5 km (Welland)	- 7.0 km (Welland)
		- number of communities by population	0	- Welland (45,417)
		- estimated population along access road *	42	42
	IC Existing Resources	- number of active farm complexes	0	0
		- sensitive crops ($000s)	19.2	19.2
		- livestock populations (000s)	.04	.04
	ID Existing Community & Recreation Features	- number and type of community and recreation features	1 - Hunt Club	32 - Hunt Club - exhibition - mini golf - malls (3) - cemetery (2) - schools (2) - churches (6) - college - government buildings (6) - temple - post office - multicultural centre - halls (2) - Salvation Army - fire station - temple club - YMCA

* Note: Estimated population along access roads includes portion of population in population concentrations

Table J.14 Comparative Evaluation of Access Road Options: PI-18E

SITE AREA	FACTORS	INDICATORS	TO PI-18E (1)	(2)
ACCESS ROADS - REGIONAL	II **Physical & Biological Environment**			
	IIA Hydrogeology	- length of sensitive lands crossed (m)	1,100	1,100
	IIB Stream Crossings	- number of stream crossings	4	4
		- stream crossing constraint rating	minor	major

Table J.15 Comparative Evaluation of Access Road Options: LF-1E/PI-27E

SITE AREA

ACCESS ROADS

		FACTORS	INDICATORS	TO PI-27E (1)	(2)	(3)
LOCAL	I	Human Environment				
	IA	Transportation Safety	- proximity to arterial road	0 km	0 km	0 km
			- difficulty of access (number of level railway crossings)	0	0	0
	IB	Existing Residents	- number and size of population concentrations	-	-	-
			- number and residences (housing)	-	-	-
			- estimated population along access roads	-	-	-
			- distance through strip residential development (km)	-	-	-
	IC	Existing Resources	- number of active farm complexes	-	-	-
			- livestock populations along access routes (within 2 km band) (000s)	-	-	-
	ID	Existing Community and Recreation Features	- number and type - community features	-	-	-
			- number and type - recreation features	-	-	-
	IE	Future Residents	- distance through residential land use designations (km)	-	-	-

Table J.15 Comparative Evaluation of Access Road Options: LF-1E/PI-27E

SITE AREA	FACTORS	INDICATORS	TO PI-27E		
			(1)	(2)	(3)
ACCESS ROADS					
LOCAL	I **Human Environment**				
	IF Future Resources	- length across Class I agricultural equivalent land (km)	-	-	-
	IG Existing Commercial and Industrial Uses	- distance through commercial area (km)	-	-	-
		- distance through industrial areas (km)	-	-	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	-	-
		- distance through designated industrial areas (km)	-	-	-
	II **Physical & Biological Environment**				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	-
	IIB Stream Crossings	- stream crossing constraint rating	-	-	-
REGIONAL	I **Human Environment**				
	IA Transportation Safety	- transportation accident frequency (accidents/ million vehicles)	64.5	4.3	46.6
		- distance to freeways (km)	- 18.2 km to 406 (existing)	- 1.0 km to QEW	- 10.1 km to 406 (proposed)
		- total number of level railway crossings	3	0	2
		- number of intersection where a turn is required	6	0	2

Table J.15 Comparative Evaluation of Access Road Options: LF-1E/PI-27E

SITE AREA	FACTORS	INDICATORS	TO PI-27E		
ACCESS ROADS			(1)	(2)	(3)
REGIONAL	IB Existing Residents	- distance through strip residential development (km)	- 7.0 km (Welland)	0	- 0.5 km (Welland)
		- number of communities by population	- Welland (45,417)	0	0
		- estimated population along access road *	107	3	107
	IC Existing Resources	- number of active farm complexes	6	0	6
		- sensitive crops ($000s)	81.3	8.0	81.3
		- livestock populations (000s)	22.7	10.4	22.7
	ID Existing Community & Recreation Features	- number and type of community and recreation features	33 - exhibition - mini golf - mall (3) - cemetery (2) - school (2) - churches (6) - college - park - government buildings (6) - temple club - post office - multicultural centre - Salvation Army - YMCA - halls (3) - fire station	0	2 - park - mall

* Note: estimated population along access roads includes portion of population in population concentrations.

Table J.15 Comparative Evaluation of Access Road Options: LF-1E/PI-27E

SITE AREA	FACTORS	INDICATORS	TO PI-27E (1)	(2)	(3)
ACCESS ROADS					
REGIONAL	II Physical & Biological Environment				
	IIA Hydrogeology	- length of sensitive lands crossed (m)	1100	0	900
	IIB Stream Crossings	- number of stream crossings	9	0	6
		- stream crossing constraint rating	major	no constraint	moderate

P-K.1
10-31-84

VOLUME 3

Candidate Site Identification

APPENDIX K

SD/LEFT.0
SD/LEFT.1
8-28-84

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(Integrated)

8/17/84 SD/RIGHT.0
SD/RIGHT.1

SITE AREA	FACTORS	INDICATORS	LF-10N	LF-11W	LF-1E	LF-3C
SITE	1. Human Environment					
	1A Existing Residents	- number of people displaced (estimated population)	29	26	45	32
		- number of residences displaced	9	8	16	9
	1B Existing Resources					
	1BI Agriculture	- number of farm building complexes - average + above average	4+0	1+0	2+0	3+0
		- cultivated land (ha)	235	126	141	175
		- urban shadow (number of farm holdings < 20 ha + number of non-farm houses)	2+3	7+6	19+8	8+1
	1BII Historical and Archaeological Resources	- historical resources	3-possible historic buildings	Butter Homestead (standing) possible historic building	Residence of shoemaker and coppersmith (non-standing)	Elcho United Church and Cemetery (standing)
		- archaeological resources potential	low	low	low	medium
	1BIII Water Resources	- aquifers	bedrock (Guelph Formation), local large diameter wells in overburden	bedrock (Guelph Formation), local large diameter wells in overburden	granular immediately above bedrock or in bedrock (Salina Formation)	granular immediately above bedrock or in bedrock (Salina Formation)
	1C Existing Community and Recreation Features	- number and type - public community features	0	0	0	1- Elcho United Church and Cemetery
		- number and type - public recreation features	0	0	0	0
		- number and type - private community features	0	0	0	0
		- number and type - private recreation features	0	0	0	0
	1D Existing Commercial and Industrial Uses	- number and type - commercial facilities	0	0	1-Frontier Auto Dismantlers	0
		- number and type - industrial facilities	0	0	0	0
	1E Future Residents	- projected population levels	-	-	-	-
		- approved residential plans of subdivision	0	0	0	0
		- residential land use designation (OP)	0	0	0	0
		- residential zoning	0	0	0	0
		- residential development proposals	0	0	0	0
	1F Future Resources	- class 1 equivalents (as % of site size)	48	69	90	89
		- rural/agricultural land use designation	Rural Agricultural I Rural Agricultural II Open Space	Agricultural	Good General Agricultural	Rural Hazard Lands

Table K.1 **COMPARATIVE EVALUATION OF SITING OPTIONS**
(Integrated)

SITE AREA	FACTORS	INDICATORS	LF-10W	LF-11W	LF-1E	LF-3C
SITE	10 Future Commercial and Industrial Uses	- planned and proposed commercial facilities	0	0	0	0
		- planned and proposed industrial facilities	0	0	0	0
	Environment (site and site vicinity)					
	11A Hydrogeology	- regional category	2a	2a	1b	1a and 1b
		- thickness of confining layer	22-23 m	18-26 m	20-25 m	24-29 m
		- geologic predictability	sand lenses in well logs confining layer thins to west	sand lenses in well logs, confining layer	generally uniform	uniform geology
		- material texture	silt-clay	silt-clay	silt-clay	silt-clay
		- oil and gas wells	0-no gas pools in area, low well density	0-no gas pools in area, low well density	1-gas pools in area, low well density	0-gas pools in area low well density
	11B Biology	- SEUs	site area contains most of 2 portions of SEU 16-1, AND 10-1	-	2 portions of SEU 19-2	-
		- non-SEU woodlots greater than 20 ha	-	part of non-SEU woodlot > 20 ha.	part of non-SEU woodlot > 20 ha.	-
		- other vegetation	small patches of woody vegetation	small wooded patches	small patches of woody vegetation	small patches of woody vegetation
		- terrestrial wildlife habitat	Yes	Possibly	Yes	Yes
		- aquatic habitat	small streams	several intermittent streams, pond	intermittent stream, temporary ponds	Beaver Creek, ponds
		- local setting	SEU extends off-site to the west	non-SEU woodlot extends off-site to west	other portions of SEU 19-2 to northeast and west and SEU 19-3 adjacent to the east	Beaver Creek valley extends off-site

Table X.1 COMPARATIVE EVALUATION OF SITING OPTIONS (Integrated)

SITE AREA	FACTORS	INDICATORS	LF-10W	LF-11W	LF-1E	LF-3C
SITE	IIC Atmospheric Dispersion	- existing air quality	low	low	relatively high	moderately low
		- topography	-rolling, very hilly	-relatively rolling, surrounding land very hilly	-quite flat	-flat, slightly hilly
		- receptors	-occasional farmhouse	-a number of farmhouses near and on site	-occasional farmhouses -near to Welland (6 km) and Niagara Falls (6 km)	-occasional farmhouse
	III. Costs					
	IIIA Land Acquisition	- land value	$1,000-$3,500/acre	$1,000-$3,500/acre	$800-$8,000/acre	$1,200-$1,700/acre
		- land fragmentation	8 parcels	10 parcels	25 parcels	13 parcels
		- land ownership (public)	0	0	St. Lawrence Seaway Authority	0
	IIIB Site Improvements	- surface drainage	good for landfill	good for landfill	fair for landfill	fair
	IIIC Utilities, Roads, Airports	- utility transmission lines re-routing	none	none	Bell and Hydro on Morris Rd. (2,1 km) Bell and Hydro on Young Rd. (0,9 km) Bell underground in southeast corner (1,0 km)	1,5 km Hydro along Wrick Rd; 1,2 km Hydro and Bell underground along Zumstein Rd.
		- road closure required	none	none	2,1 km Morris Rd. (Gravel) 1,3 km Young Rd. (Gravel)	1,5 km Wrick Rd. (Gravel) 0,6 km Zumstein Rd. (Gravel)
		- airport-smokestack height conflict (incinerator)	none	none	none	none
	IIID Site Size and Configuration	- total area (acres) (ha)	649 (259,6)	378 (151,2)	660 (264)	649 (259,6)

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(Integrated)

SITE AREA	FACTORS	INDICATORS	LF-8C	LF-9C	LF-3E	LF-4H
SITE	I. Human Environment					
	IA Existing Residents	- number of people displaced (estimated population)	25	11	31	20
		- number of residences displaced	7	3	11	6
	IB Existing Resources					
	IBI Agriculture	- number of farm building complexes - average + above average	2+2	2+0	1+0	1+0
		- cultivated land (ha)	144	105	80	123
		- urban shadow (number of farm holdings 20 ha + number of non-farm houses)	1+4	0+0	17+8	4+3
	IBII Historical and Archaeological Resources	- historical resources	-	possible historic building hub manufacturer (non-standing)	school (standing converted to a residence)	Century Farm (standing)
		- archaeological resources potential	low	low	low	low
	IBIII Water Resources	- aquifers	granular immediately above bedrock or bedrock (Guelph Formation)	granular immediately above bedrock or bedrock (Guelph Formation)	granular immediately above bedrock or bedrock (Salina Formation)	wells finished in granular immediately above and in Queenston Formation
	IC Existing Community and Recreation Features	- number and type - public community features	0	0	0	0
		- number and type - public recreation features	0	0	0	0
		- number and type - private community features	0	0	1-Hungarian Cultural Centre	0
		- number and type - private recreation features	0	0	0	0
	ID Existing Commercial and Industrial Uses	- number and type - commercial facilities	0	0	1-Canine Education Centre	0
		- number and type - industrial facilities	0	0	0	0
	IE Future Residents	- projected population levels	-	-	-	-
		- approved residential plans of subdivision	0	0	0	0
		- residential land use designation (OP)	0	0	0	0
		- residential zoning	0	0	0	0
		- residential development proposals	0	0	0	0
	IF Future Resources	- class 1 equivalents (as % of site size)	73	68	64	93
		- rural/agricultural land use designation	Rural Hazard Lands	Rural Hazard Lands	Good General Agricultural Open Space	Agriculture

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS (Integrated)

SITE AREA	FACTORS	INDICATORS	LF-8C	LF-9C	LF-3E	LF-4H
SITE	IG Future Commercial and Industrial Uses	- planned and proposed commercial facilities	0	0	0	0
		- planned and proposed industrial facilities	0	0	0	0
	II. Physical and Biological Environment (site and site vicinity)					
	IIA Hydrogeology	- regional category	Ia	Ia	Ib	Ib
		- thickness of confining layer	37-43 m	29-37 m	14-20 m	15-24 m
		- geologic predictability	generally uniform	generally uniform	generally uniform geology	more than 1 till layer (silty clay till overlying sandy silt till) granular at depth
		- material texture	silt-clay	silt-clay	silt-clay	clayey to silty till
		- oil and gas wells	0-gas pools in area, low well density	0-gas pools in area, low well density	2-gas pools in area, low well density	no gas pools in area, low well density
	IIB Biology	- SEUs	-	-	portion of SEU 19-2 in SW corner of site area and SEU 19-4 intrudng on to site	-
		- non-SEU woodlots greater than 20 ha	-	-	non-SEU woodlot > 20 ha.	-
		- other vegetation	small wooded and thicket patches	small wooded patches/ thickets	wooded patches	wooded patches < 20 ha. in area
		- terrestrial wildlife habitat	Possibly	Possibly	Yes	Possibly
		- aquatic habitat	intermittent tributary to Sucker Creek, pond(s)	drainage channels, swales	temporary ponds	stream, small ponds
		- local setting	Sucker Creek to west, SEU 18-8 to north, non-SEU woodlot > 20 ha east of site	Sucker Creek to east, small patches of woods adjacent on 3 sides	portions of SEU 19-2 to west and south; SEU 19-3 to south of site; SEU 19-4 extends off-site to east	small woodlots adjacent site

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(Integrated)

SITE AREA	FACTORS	INDICATORS	LF-8C	LF-9C	LF-3E	LF-4M
SITE	IIC Atmospheric Dispersion	- existing air quality	-moderate	-moderate	-relatively high	-low
		- topography	-relatively flat	-relatively flat	-relatively flat	-very flat -near to Niagara Escarpment (approximately 4 km)
		- receptors	-occasional farmhouse	-occasional farmhouse	-occasional farmhouse -near Welland (7 km) and Niagara Falls (5 km)	-few farmhouses and rural homes -near to Milton (4 km)
	III. Costs					
	IIIA Land Acquisition	- land value	$1,200-$1,700/acre	$1,200-$1,700/acre	$800-$8,000/acre	$3,000/acre
		- land fragmentation	7 parcels	4 parcels	20 parcels	8 parcels
		- land ownership (public)	0	0	0	0
	IIIB Site Improvements	- surface drainage	fair	fair	fair	good
	IIIC Utilities, Roads, Airports	- utility transmission lines re-routing	2 km underground Bell cable in site	1 km underground Bell cable cuts diagonally through site	0.2 km of pipeline at north end of site	none
		- road closure required	none	none	none	none
		- airport-smokestack height conflict (incinerator)	none	none	none	within 2 km of Burlington Airpark, may involve navigational effects
	IIID Site Size and Configuration	- total area (acres) (ha)	383 (153.2)	314 (125.6)	426 (170.4)	419 (167.6)

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-2N/PI-1AI	LF-2N/PI-1N	LF-4N/PI-1N	LF-1C/PI-18E
SITE	I. Human Environment					
	IA Existing Residents	- number of people displaced (estimated population)	LF-2N-16 PI-1AI-17	LF-2N-16 PI-1N-42	LF-4N-20 PI-1N-42	LF-1C-13 PI-18E-31
		- number of residences displaced	LF-2N-5 PI-1AI-5	LF-2N-5 PI-1N-13	LF-4N-6 PI-1N-13	LF-1C-4 PI-18E-11
	IB Existing Resources					
	IBI Agriculture	- number of farm building complexes - average + above average	1+0	1+0	1+0	5+0
		- cultivated land (ha)	251	506	469	138
		- urban shadow (number of farm holdings < 20 ha + number of non-farm houses)	6+5	21+9	20+10	28+9
	IBII Historical and Archaeological Resources	- historical resources	-possible historic building (PI-1AI) -possible historic building (LF-2N) -store (LF-2N) (non-standing)	-possible historic building (PI-1N) -possible historic building (LF-2N) -store (LF-2N) (non-standing)	-Century Farm (LF-4N) (standing) -possible historic building (PI-1N)	-
		- archaeological resources potential	LF-2N: medium PI-1AI: high	LF-2N: medium PI-1N: medium	LF-4N: low PI-1N: medium	low
	IBIII Water Resources	- aquifers	wells finished in granular above bedrock and bedrock (Queenston Formation) and Georgian Bay Formation)	LF-2N: granular and bedrock (Queenston Formation) PI-1N: buried granular above bedrock and bedrock (Queenston Formation)	granular aquifer immediately above bedrock and bedrock (Queenston Formation)	granular immediately above bedrock or bedrock (Salina Formation)
	IC Existing Community and Recreation Features	- number and type - public community features	0	0	0	0
		- number and type - public recreation features	0	0	0	0
		- number and type - private community features	0	0	0	0
		- number and type - private recreation features	0	1-Hunterbrook Farms (PI-1N)	1-Hunterbrook Farms (PI-1N)	0
	ID Existing Commercial and Industrial Uses	- number and type - commercial facilities	2-Gas Station (LF-2N) -Contractor's Yard (LF-2N)	4-Air strips (PI-1N) -Riding Stable (PI-1N) -Gas Station (LF-2N) -Contractor's Yard (LF-2N)	2-Riding Stable (PI-1N) -Air strips (PI-1N)	2-Used car lot (PI-18E) -Body Shop (PI-18E)
		- number and type - industrial facilities	1- Region of Peel Works Yard (LF-2N)	1- Region of Peel Works Yard (LF-2N)	0	0
	IE Future Residents	- projected population levels	-	-	-	-
		- approved residential plans of subdivision	0	0	0	0
		- residential land use designation (OP)	0	0	0	0
		- residential zoning	0	0	0	0
		- residential development proposals	0	0	0	0
	IF Future Resources	- class 1 equivalents (as % of site size)	99	93	92	36
		- rural/agricultural land use designation	LF-2N: Special Policy Area PI-1AI: Industrial, Commercial, Open Space	LF-2N: Special Policy Area PI-1N: Agriculture -Conservation/Hazard	LF-4N: Agricultural PI-1N: Agriculture -Conservation Hazard	LF-1C: Industrial, Rural PI-18E: Heavy Industrial -Rural

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-2N/PI-1A1	LF-2N/PI-1N	LF-4N/PI-1N	LF-1C/PI-18E
SITE	1G Future Commercial and Industrial Uses	- planned and proposed commercial facilities	Official Plan permits a service commercial use which may be about 5 acres in area (PI-1A1). Proposed secondary plan would permit a variety of commerical and industrial uses.	Proposed secondary plan would permit a variety of commercial and industrial uses	0	0
		- planned and proposed industrial facilities	Official Plan permits the entire site to develop for industrial uses, excluding hazard lands and commercial (PI-1A1)	0	0	Official Plan permits industrial development of about 60% of site (LF-1C) and 45% (PI-18E)
	II. Physical and Biological Environment (site and site vicinity)					
	IIA Hydrogeology	- regional category	PI-1A1-2a LF-2N-2a	PI-1N-1b LF-2N-2a	PI-1N-1b LF-4N-1b	LF-1C-1a PI-18E-1a
		- thickness of confining layer	LF-2N - 10-30 m PI-1A1 - 21-38 m	LF-2N - 10-34 m PI-1N - 15-20 m	LF-4N - 15-24 m PI-1N - 12-20 m	LF-1C - 26-39 m PI-18E - 20-40 m
		- geologic predictability	till in buried valley, many sand seams noted in well logs buried granular	LF-2N-till in buried bedrock valley, many sand seams noted in well logs PI-1N-confining layer thins to 10 m in south, sand lenses occasional	LF-4N-more than 1 till layer -silty clay till over sandy silt till, granular at depth PI-1N-confining layer thins to 10 m in south, sand lenses occasional	generally uniform, LF-1C - some wells show sand from surface to depth; likely an incorrect interpretation
		- material texture	clayey to silty till	clayey to silty till	clayey to silty till	silt-clay
		- oil and gas wells	0-no gas pools in area, low well density	0-no gas pools in area, low well density	0-no gas pools in area, low well density	0-gas pools in area LF-1C - low well density PI-18E - moderate density
	IIB Biology	- SEUs	-	-	-	-
		- non-SEU woodlots greater than 20 ha	-	-	-	-
		- other vegetation	LF-2N - fields PI-1A1 - wooded patches <20 ha. in area	LF-2N - fields PI-1N - wooded patches <20 ha. in area	LF-4N - wooded patches <20 ha. in area PI-1N - wooded patches <20 ha. in area	LF-1C - wooded patches <20 ha. in area PI-18E - wooded patches <20 ha. in area
		- terrestrial wildlife habitat	LF-2N - PI-1A1 - possibly	LF-2N - PI-1N - possibly	LF-4N - possibly PI-1N - possibly	LF-1C - yes PI-18E -
		- aquatic habitat	LF-2N - intermittent drainage channels PI-1A1 - streams, tributaries to W. Humber River	LF-2N - intermittent drainage channels PI-1N - several intermittent streams	LF-4N - 1 stream, small ponds PI-1N - several intermittent streams	LF-1C - scattered ponds and swales PI-18E - 1 creek - possibly intermittent, scattered ponds
		- local setting	LF-2N - wooded patches to northeast of site PI-1A1 - stream valleys extending off-site to north and south	LF-2N - wooded patches to northeast of site PI-1N - surrounded by farmland	LF-4N - non-SEU woodlots <20 ha. adjacent to north and south of site PI-1N - surrounded by farmland	LF-1C - SEU 18-27 to south and east and SEU 18-25 to west of site PI-18E - non-SEU woodlot >20 ha. to west

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-2N/PI-1A1	LF-2N/PI-1N	LF-4N/PI-1N	LF-1C/PI-18E
SITE	IIC Atmospheric Dispersion	- existing air quality	PI-1A1 - moderate	PI-1N - low	PI-1N - low	PI-18E-moderate to moderately high
		- topography	PI-1A1 - relatively flat	PI-1N - flat Proximity to Niagara Escarpment (6 km)	PI-1N - flat Proximity to Niagara Escarpment (6 km)	PI-18E - relatively flat
		- receptors	PI-1A1 - occasional farmhouses PI-1A1 - near to Brampton 2 km)	PI-1N - occasional farmhouses PI-1N - near to Milton (4 km)	PI-1N - occasional farmhouses PI-1N - near to Milton (4 km)	PI-18E - several rural settlements, small industries, storage facilities PI-18E - near to Welland (2 km)
	III. Costs					
	IIIA Land Acquisition	- land value	LF-2N-$40,000/acre PI-1A1-$25,000-$42,000/acre	LF-2N-$40,000/acre PI-1N-$2,800-$3,500/acre	LF-4N-$3,000/acre PI-1N-$2,800-$3,500/acre	LF-1C-unknown PI-18E-unknown
		- land fragmentation	LF-2N - 9 parcels (inc. Hydro) PI-1A1 - 3 parcels	LF-2N - 9 parcels (inc. Hydro) PI-1N - 23 parcels	LF-4N - 8 parcels PI-1N - 23 parcels	LF-1C - 9 parcels PI-18E - 21 parcels
		- land ownership (public)	LF-2N - Ontario Hydro PI-1A1 - M.T.R.C.A.	LF-2N - Ontario Hydro	0	LF-1C - St. Lawrence Seaway Authority PI-18E - St. Lawrence Seaway Authority - Ontario Hydro
	IIIB Site Improvements	- surface drainage	LF-2N - good PI-1A1 - good	LF-2N - good PI-1N - fair	LF-4N - good PI-1N - fair	LF-1C - poor PI-18E - fair
	IIIC Utilities, Roads, Airports	- utility transmission lines re-routing	LF-2N - 230 kw. line on site	LF-2N - 230 kv line on site PI-1N - Sun Oil Pipeline through site in east/west direction	LF-4N - none PI-1N - Sun Oil Pipeline through site in east/west direction	LF-1C - 0.2 km of Bell and Hydro on Deeks Road PI-18E - none
		- road closure required	none	None-First Line Road at PI site does not require closure	None-First Line Road at PI site does not require closure	LF-1C - 1.3 km. Deeks Road (Gravel)
		- airport-smokestack height conflict (incinerator)	none	Some effect on local navigation is possible	Some effect on local navigation is possible	none
	IIID Site Size and Configuration	- total area (acres) (ha)	725 (290.0)	1344 (537.6)	1352 (540.8)	703 (281.2)

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-10W/PI-2W	LF-11W/PI-2W	LF-1E/PI-27E	LF-2W/PI-13W
SITE	I. Human Environment					
	IA Existing Residents	- number of people displaced (estimated population)	LF-10W-29 PI-2W-16	LF-11W-26 PI-2W-16	LF-1E-45 PI-27E-17	LF-2W-16 PI-13W-13
		- number of residences displaced	LF-10W-9 PI-2W-5	LF-11W-8 PI-2W-5	LF-1E-16 PI-27E-6	LF-2W-5 PI-13W-4
	IB Existing Resources					
	IBI Agriculture	- number of farm building complexes - average + above average	5+1	2+1	3+0	4+0
		- cultivated land (ha)	364	255	253	283
		- urban shadow (number of farm holdings < 20 ha + number of non-farm houses)	6+6	11+9	26+12	6+3
	IBII Historical and Archaeological Resources	- historical resources	-possible historic buildings (LF-10W) -possible historic buildings (PI-2W) (3) -Bradshaw family cemetery (PI-2W) -saw mill (non-standing) (PI-2W)	-Butter Homestead (LF-11W) (standing) -possible historic building (LF-11W) -possible historic buildings (PI-2W) (3) -Bradshaw family cemetery (PI-2W) -saw mill (non-standing) (PI-2W)	-Church (non-standing) (PI-27E) -Residence (non-standing) (LF-1E)	-possible historic buildings (LF-2W) -Store (non-standing) (LF-2W)
		- archaeological resources potential	LF-10W: low PI-2W: high	LF-11W: low PI-2W: high	LF-1E: low PI-27E: high	LF-2W: medium PI-13W: medium
	IBIII Water Resources	- aquifers	bedrock (Guelph Formation), local large diameter wells in overburden	bedrock (Guelph Formation), local large diameter wells in overburden	granular immediately above bedrock or bedrock (Salina Formation)	LF-2W: granular and (Georgian Bay Formation) PI-13W: bedrock (Queenston Formation)
	IC Existing Community and Recreation Features	- number and type - public community features	0	0	0	0
		- number and type - public recreation features	0	0	0	0
		- number and type - private community features	0	0	0	0
		- number and type - private recreation features	0	0	0	0
	ID Existing Commercial and Industrial Uses	- number and type - commercial facilities	0	0	1-Auto Dismantlers (LF-1E)	2-Gas station (LF-2W) -Contractor's Yard (LF-2W)
		- number and type - industrial facilities	0	0	1-warehouse office (PI-27E)	1-Region of Peel Work Yard (LF-2W)
	IE Future Residents	- projected population levels - approved residential plans of subdivision - residential land use designation (OP) - residential zoning - residential development proposals	- 0 0 0 0	- 0 0 0 0	- 0 0 0 0	- 0 0 0 0
	IF Future Resources	- class 1 equivalents (as % of site size)	51	61	77	92
		- rural/agricultural land use designation	LF10W: Rural Agricultural I -Rural Agricultural II -Open space PI2W: Industrial -Agricultural	LF-11W: Agricultural PI-2W: Industrial -Agricultural	LF-1E: Good general agricultural PI-27E: Industrial	LF-2W: Special policy area PI-13W: Agriculture

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-10W/PI-2W	LF-11W/PI-2W	LF-1E/PI-27E	LF-2N/PI-13N
SITE	IG Future Commercial and Industrial Uses	- planned and proposed commercial facilities	0	0	0	LF-2N
		- planned and proposed industrial facilities	Official Plan permits about 70% of site to be developed for industrial purposes (PI-2W)	Official Plan permits about 70% of site to be developed for industrial purposes (PI-2W)	Proposed Official Plan would permit industrial development of entire site	Proposed secondary plan would permit a variety of industrial and commerical uses
	II. Physical and Biological Environment (site and site vicinity)					
	IIA Hydrogeology	- regional category	2a	2a	LF-1E - 1b PI-27E - 1b	LF-2N - 2a PI-13N - 1c
		- thickness of confining layer	LF-10W - 22-23 m PI-2W - 0-32 m av.	LF-11W - 18-26 m PI-2W - 0-32 m av.	LF-1E - 20-25m PI-27E - 14-20 m	LF-2N - 10-34m PI-13N - 5-12 m
		- geologic predictability	sand lenses in logs, confining layer thins to west	sand lenses in logs, confining layer thins to west	LF-1E - generally uniform - occasional sand immediately above bedrock PI-27E - generally uniform - occasional sand immediately above bedrock	LF-2N-till in buried bedrock valley, many sand lenses PI-13N-generally uniform, shallow bedrock in area
		- material texture	silt-clay	silt-clay	silt-clay	clayey to silty till
		- oil and gas wells	0-no gas pools, low well density	0-no gas pools, low well density	LF-1E - one gas pool PI-27E - two gas pools	0-no gas pools in area, low well density
	IIB Biology	- SEUs	LF-10W - 2 portions of SEU 9-1, contains an ANSI PI-2W -	LF-11W - PI-2W -	LF-1E - 2 portions of SEU 19-2 PI-27E -	LF-2N - PI-13N - SEU along margin
		- non-SEU woodlots greater than 20 ha	LF-10W - PI-2W - small portion of non-SEU woodlot > 20 ha.	LF-11W - part of non-SEU woodlot >20 ha. PI-2W small portion of non-SEU woodlot > 20ha. which contains ANSI 6-1	LF-1E - part of non-SEU woodlot >20 ha. PI-27E -	PI-13N -
		- other vegetation	LF-10W - small patches of woody vegetation PI-2W - small wooded patches <20 ha.	LF-11W - small patches of woody vegetation PI-2W - small woody patches <20 ha.	LF-1E - small patches of woody vegetation PI-27E - wooded patches <20 ha in size	LF-2N - fields PI-13N - wooded patches< 20 ha. in area
		- terrestrial wildlife habitat	LF-10W - yes PI-2W - possibly	LF-11W - possibly PI-2W - possibly	LF-1E - yes PI-27E - possibly	LF-2N - PI-13N - possibly
		- aquatic habitat	LF-10W - small streams PI-2W - intermittent streams	LF-11W - intermittent streams, pond PI-2W - intermittent streams	LF-1E - intermittent stream, temporary ponds PI-27E - Grassy Brook, un-named tributary to Lyons Creek	LF-2N - intermittent drainage channels PI-13N - intermittent drainage channels
		- local setting	LF-10W - SEU extends off-site to the west PI-2W - non-SEU woodlot > 20 ha. to southeast	LF-11W - non-SEU woodlot extends off-site to east PI-2W - non-SEU woodlot >20 ha. to southeast	LF-1E - other portions of SEU 19-2 to northeast and west and SEU 19-3 adjacent to the east PI-27E - Welland River to north; SEUs to north and south of site	LF-2N - wooded patches to northeast of site PI-13N - SEU 5-2 in the southeast corner of the site

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-10W/PI-2W	LF-11W/PI-2W	LF-1E/PI-27E	LF-2N/PI-13N
SITE	IIC Atmospheric Dispersion	- existing air quality	PI-2W - moderate	PI-2W - moderate	PI-27E - quite high	PI-13N - low
		- topography	PI-2W - very hilly terrain	PI-2W - very hilly terrain	PI-27E - predominantly flat	PI-13N - relatively flat; near deep river valley
		- receptors	PI-2W - occasional farmhouses, near to Ancaster (5 km)	PI-2W - occasional farmhouses, near to Ancaster (5 km)	PI-27E - occasional farmhouses, near to Niagara Falls (3 km)	PI-13N - occasional farmhouses, near to Milton (7 km)
	III. Costs					
	IIIA Land Acquisition	- land value	LF-10W-$1,000-3,500/acre PI-2W-$1,000-$10,000/acre	LF-11W-$1,000-$3,500/acre PI-2W-$1,000-$10,000/acre	LF-1E-$600-$18,000/acre PI-27E-$1,400-$10,000/acre	LF-2N-$40,000/acre PI-13N-$2,800-$10,000/acre
		- land fragmentation	LF-10W - 8 parcels PI-2W - 11 parcels	LF-11W - 10 parcels PI-2W - 11 parcels	LF-1E - 25 parcels PI-27E -13 parcels	LF-2N - 9 parcels(inc. Hydro) PI-13N - 5 parcels
		- land ownership (public)	PI-2W - Regional Municipality of Hamilton-Wentworth, M.T.C., Hydro	PI-2W - Regional Municipality of Hamilton-Wentworth, M.T.C., Hydro	LF-1E - St. Lawrence Seaway Authority PI-27E - Ontario Hydro	PI-13N - Ontario Land Corporation LF-2N - Ontario Hydro
	IIIB Site Improvements	- surface drainage	good	good	LF-1E - fair for landfill PI-27E - good	good
	IIIC Utilities, Roads, Airports	- utility transmission lines re-routing	LF-10W - none PI-2W - Hydro lines through site (230 and 500 kv)	LF-11W - none PI-2W Hydro lines through site (230 and 500 kv)	LF-1E-Bell & Hydro on Morris (2.1 km.) & Young (0.9 km) Bell underground in south east corner (1.0 km) PI-27E - IPL line in south west corner, 115 kv hydro line diagonally through site	LF-2N - 230 kv line on site
		- road closure required	none	none	LF-1E - 2.1 km Morris Rd. (gravel) & 1.3 km Young Rd. (gravel) PI-27E - nil	none
		- airport-smokestack height conflict (incinerator)	PI-2W - 70 m. max. height	PI-2W - 70 m. max. height	none	none
	IIID Site Size and Configuration	- total area (acres) (ha)	1025 (410.0)	757 (302.8)	1113 (445.2)	827 (330.8)

Table K,1 COMPARATIVE EVALUATION OF SITING OPTIONS
(Integrated)

SITE AREA	FACTORS	INDICATORS	LF-4N/PI-13N
SITE	I. Human Environment		
	IA Existing Residents	- number of people displaced (estimated population)	LF-4N-7-20 PI-13N-13
		- number of residences displaced	LF-4N-6 PI-13N-4
	IB Existing Resources		
	IBI Agriculture	- number of farm building complexes - average + above average	4+0
		- cultivated land (ha)	246
		- urban shadow (number of farm holdings < 20 ha + number of non-farm houses)	5+4
	IBII Historical and Archaeological Resources	- historical resources	-Century Farm (standing) (LF-4N)
		- archaeological resources potential	LF-4N: low PI-13N: medium
	IBIII Water Resources	- aquifers	granular at bedrock contact and bedrock Queenston Formation
	IC Existing Community and Recreation Features	- number and type - public community features	0
		- number and type - public recreation features	0
		- number and type - private community features	0
		- number and type - private recreation features	0
	ID Existing Commercial and Industrial Uses	- number and type - commercial facilities	0
		- number and type - industrial facilities	0
	IE Future Residents	- projected population levels	-
		- approved residential plans of subdivision	0
		- residential land use designation (OP)	0
		- residential zoning	0
		- residential development proposals	0
	IF Future Resources	- class 1 equivalents (as % of site size)	90
		- rural/agricultural land use designation	LF-4N: Agriculture PI-13N: Agriculture, Conservation/Hazard Lands

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS
(Integrated)

SITE AREA	FACTORS	INDICATORS	LF-4N/PI-13N
SITE	IG Future Commercial and Industrial Uses	- planned and proposed commercial facilities	0
		- planned and proposed industrial facilities	0
	II. Physical and Biological Environment (site and site vicinity)		
	IIA Hydrogeology	- regional category	LF-4N - Ib, C PI-13N - IC
		- thickness of confining layer	LF-4N 15-24 m PI-13N 9-12 m
		- geologic predictability	LF-4N-more than till layer (silty clay till overlying sandy silt till), granular at depth PI-13N - generally uniform, shallow bedrock in area
		- material texture	clayey to silty till
		- oil and gas wells	0-no gas pools in area, low well density
	IIB Biology	- SEUs	PI-13N - SEU along margin
		- non-SEU woodlots greater than 20 ha	-
		- other vegetation	LF-4N - wooded patches < 20 ha. in area PI-13N - wooded patches < 20 ha. in area
		- terrestrial wildlife habitat	LF-4N - possibly LF-13N - possibly
		- aquatic habitat	LF-4N - stream, small ponds PI-13N - intermittent drainage channels
		- local setting	LF-4N - non-SEU woodlot < 20 ha. adjacent to north and south of site PI-13N - SEU 9-2 in the southeast corner of the site

Table K.1 COMPARATIVE EVALUATION OF SITING OPTIONS

SITE AREA	FACTORS	INDICATORS	LF-4N/PI-13N
SITE	IIC Atmospheric Dispersion	- existing air quality	PI-13N - low
		- topography	PI-13N - relatively flat; near deep river valley
		- receptors	PI-13N - occasional farmhouses, near to Milton (7 km)
	III. Costs		
	IIIA Land Acquisition	- land value	LF-4N-$3,000/acre PI-13N-$2,000-$10,000/acre
		- land fragmentation	LF-4N - 8 parcels PI-13N - 5 parcels
		- land ownership (public)	PI-13N-Ontario Land Corporation
	IIIB Site Improvements	- surface drainage	good
	IIIC Utilities, Roads, Airports	- utility transmission lines re-routing	none
		- road closure required	none
		- airport-smokestack height conflict (incinerator)	none
	IIID Site Size and Configuration	- total area (acres) (ha)	833 (334.0)

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(Integrated)

SITE	FACTORS	INDICATORS	LF-10W	LF-11W	LF-1F	LF-3C
SITE AREA						
SITE VICINITY	1. Human Environment					
	1A Existing Residents	- number of people (estimated population)	52	122	62	25
		- number of residences	16	30	22	7
	1B Existing Resources	- number of farm building complexes, average and above average with lands in 500 m and 1000 m	9+1	12+1	4+0	7+3
		- sensitive crops (within 5 km radius $/ha)	170	180	46	146
		- livestock populations (within 5 km radius #/40 ha)	426	769	1382	2794
	1C Existing Community and Recreation Features	- number and type - public community features	Owandaie Baptist Church and Cemetery	0	0	0
		- number and type - public recreational features	0	0	0	0
		- number and type - private community features	0	0	0	0
		- number and type - private recreational features	0	0	0	0
		- known archaeological and historical sites	-	Century Farm	-	-
	1D Community Character and Lifestyle	- land use pattern	-agricultural with significant Hydro corridor and transmission station impact	-agricultural with significant non-farm residences and some Hydro corridor and transmission station impact	-agricultural with some non-farm uses, including rural non-farm residences and commercial uses	-agricultural, very few non-farm uses
		- social and economic character	-rural area, no industry, mix of rural residential and farm dwellings	-rural area, no industry, primarily rural residential dwellings, some farm dwellings	-urban fringe area, within view of industry, mix of rural residential and farm dwellings	-rural area, no industry, mix of rural residential and farm dwellings
	1E Future Residents	- projected population levels	0	0	0	0
		- approved residential plans of subdivision	0	0	0	0
		- residential land use designations	0	0	0	0
		- residential zoning	0	0	0	0
		- residential development proposals	0	0	0	0

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(Integrated)

SITE AREA	FACTORS	INDICATORS	LF-10W	LF-11W	LF-1E	LF-3C
SITE VICINITY	I. Human Environment					
	IF Future Resources	- predominant soil capability class	4	3>4	2	2-3
		- rural/agricultural designation	-Rural Agricultural I -Rural Agricultural II -Open Space	-Agricultural -Rural Agricultural I -Rural Agricultural II -Open Space	-Good General Agricultural	-Rural -Hazard Lands
	IG Existing Commercial and Industrial Uses	- number and type - commercial facilities	1-Automobile repair	1- Kennel associated with a Residence	1- Used Cars and Repairs 1- Repair Operation	0
		- number and type - industrial facilities	0	0	0	0
	IH Future Commercial and Industrial Uses	- planned and proposed commercial facilities	0	0	0	0
		- planned and proposed industrial facilities	0	0	0	0
	II. Costs					
	IIA	- proximity to rail access (to PI sites)	none	none	-ConRail adjoins site	-0.3 km from T.H. & B. -arterial road crossing required (Smithville Road/ R.R.#16)

TR-10.4
10-16-84

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(Integrated)

	SITE AREA	FACTORS	INDICATORS	LF-8C	LF-9C	LF-3E	LF-4H
	SITE VICINITY	1. Human Environment					
		1A Existing Residents	- number of people (estimated population)	39	53	31	42
			- number of residences	11	15	11	13
		1B Existing Resources	- number of farm building complexes, average and above average with lands in 500 m and 1000 m	9+4	6+4	6+0	4+1
			- sensitive crops (within 5 km radius $/ha)	190	147	43	76
			- livestock populations (within 5 km radius #/40 ha)	3099	3446	1850	1024
		1C Existing Community and Recreation Features	- number and type - public community features	Bethel Church	0	0	0
			- number and type - public recreation features	0	0	0	0
			- number and type - private community features	0	0	0	0
			- number and type - private recreation features	0	0	0	0
			- known archaeological and historical sites	-	-	-	-
TR-10.5		1D Community Character and Lifestyle	- land use pattern	-agricultural, few non-farm residences	-agricultural, some non-farm residences	-agricultural with some non-farm uses -site abuts developing industrial area with light and heavy industrial uses	-agricultural, with some non-farm residential uses -Niagara Escarpment is dominant visual feature
			- social and economic character	-rural area, no industry, mix of rural residential and farm dwellings	-rural area, no industry, mix of rural residential and farm dwellings	-urban fringe area, within view of industry, mix of rural residential and farm dwellings	-urban fringe area, no industry, mix of rural residential and farm dwellings
		1E Future Residents	- projected population levels	0	0	0	0
			- approved residential plans of subdivision	0	0	0	0
			- residential land use designations	0	0	0	0
			- residential zoning	0	0	0	0
			- residential development proposals	0	0	0	0

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(Integrated)

SITE AREA	FACTORS	INDICATORS	LF-8C	LF-9C	LF-3E	LF-4H
SITE VICINITY	I. Human Environment					
	IF Future Resources	- predominant soil capability class	2	2	3	1
		- rural/agricultural designation	-Rural -Hazard Lands	-Rural -Hazard Land -Highway Commercial	-Industrial -Good General Agricultural -Hazard Lands	-Agricultural -Conservation and Hazard Lands
	IG Existing Commercial and Industrial Uses	- number and type - commercial facilities	2-Vacant grocery store -Hair stylist	1-Vacant gas station	1-Equipment Repairs	0
		- number and type - industrial facilities	0	0	0	0
	IH Future Commercial and Industrial Uses	- planned and proposed commercial facilit..	0	0	0	0
		- planned and proposed industrial faciliti..	0	0	-Potential industrial development north of Bigger Rd.	0
	II. Costs					
	IIA	- proximity to rail access (to PI sites)	-2.0 km from T.H. & B., road crossing required (Vaughan Road East)	-1.5 km from T.H. & B., arterial road crossing required (Hwy. 20)	-ConRail adjacent, road crossings required (Crowland Avenue)	-1 km from CN Rail, road crossing required (Tramsline Road/R.R.# 22)

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(partially integrated)

SITE	FACTORS	INDICATORS	LF-2N/PI-1A1	LF-2N/PI-1N	LF-4N/PI-1N	LF-1C/PI-18E
SITE AREA						
SITE VICINITY	1. Human Environment					
	1A Existing Residents	- number of people (estimated population)	LF-2N-52 PI-1A1-38	LF-2N-52 PI-1N-45	LF-4N-42 PI-1N-45	LF-1C-13 PI-18E-96
		- number of residences	LF-2N:-16 PI-1A1:-11	LF-2N:-16 PI-1N:-14	LF-4N:-13 PI-1N:-14	LF-1C:-4 PI-18E:-20
	1B Existing Resources	- number of farm building complexes, average and above average with lands in 500 m and 1000 m	7+0	13+0	14+1	5+2
		- sensitive crops (within 5 km radius $/ha)	57	65	65	32
		- livestock populations (within 5 km radius #/40 ha)	24	799	799	318
	1C Existing Community and Recreation Features	- number and type - public community features	0	0	0	0
		- number and type - public recreation features	1-Derrydale Golf Course (LF-2N)	1-Derrydale Golf course (LF-2N)	0	0
		- number and type - private community features	1-Hansa Haus (LF-2N)	1-Hansa Haus (LF-2N)	0	0
		- number and type - private recreation features	0	0	0	0
		- known archaeological and historical sites	1-Derry West Historic Cemetery (LF-2N)	1-Derry West Historic Cemetery (LF-2N)	-	-
	1D Community Character	- land use pattern	-LF-2N-rural area with many urban uses, area under pressure for urban development -PI-1A1-industrial development currently underway, future and existing residential to north	-LF-2N-rural area with many urban uses, area under pressure for urban development -PI-1N-agricultural area with significant non-farm uses	-LF-4N-agricultural area with some non-farm uses - Niagara Escarpment is dominant visual feature -PI-1N-agricultural area with significant non-farm uses	-LF-1C-agricultural area with many non-farm residential units beyond site vicinity, to be developed for industrial -PI-18E-on edge of major heavy and light industrial area scattered with residential and commercial
		- social and economic character	-urban fringe areas, within view of industry, primarily rural residential dwellings, some farm dwellings	-LF-2N-urban fringe area, within view of industry, primarily rural residential dwellings, some farm dwellings -PI-1N-urban fringe area, no industry, mix of rural residential and farm dwellings	-LF-4N-urban fringe area, no industry, mix of rural residential and farm dwellings -PI-1N-urban fringe area, no industry, mix of rural residential and farm dwellings.	-LF-1C-urban fringe area, within view of industry, mix of rural residential and farm dwellings -PI-18E-industrial area, primarily rural residential dwellings
	1E Future Residents	- projected population levels - approved residential plans of subdivision - residential land use designations - residential zoning - residential development proposals	±600 (PI-1A1) 0 ±90ac (PI-1A1) ±3ac ((PI-1A1 0	0 0 LF-2N (25) 0 0	0 0 0 0 0	0 0 0 0 0

10-16-84
TR-10.8

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-2N/PI-1A1	LF-2N/PI-1N	LF-4N/PI-1N	LF-1C/PI-1BE
SITE VICINITY	I. Human Environment					
	IF Future Resources	- predominant soil capability class	1	1	1	3
		- rural/agricultural designation	LF-2N- Special Policy Area, Major open space PI-1A1-Industrial, Open Space, Residential, Rural, Commercial, Rural Estate, Rural Estate Expansion	LF-2N-Special Policy Area, Major open space PI-1N-Agriculture Conservation, Hazard Lands, Parkway Belt	LF-4N- Agriculture Conservation, Hazard Lands -PI-1N-Agriculture Conservation, Parkway Belt, Hazard Lands	LF-1C -Rural, Industrial PI-1BE -Heavy Industrial, Light Industrial, Hazard Lands
	IG Existing Commercial and Industrial Uses	- number and type - commercial facilities	4-2 gas stations/restaurant -fruit market	5-restaurant, gas stations (2) -fruit market (LF-2N) -nursery (PI-1N)	1-nursery (PI-1N)	1-salvage yard (PI-1BE)
		- number and type - industrial facilities	0	0	0	7-vicinity of light medium and heavy industrial uses (PI-1BE)
	IH Future Commercial and Industrial Uses	- planned and proposed commercial facilities	0	0	0	0
		- planned and proposed industrial facilities	PI-1A1-Industrial Plans of Subdivision; LF-2N proposed secondary plan would permit a variety of commerical and industrial uses	LF-2N proposed secondary plan would permit a variety of commercial and industrial uses	0	0
	II. Costs					
	IIA	- proximity to rail access (to PI sites)	none	C.N.R. line adjacent	0.4 km from C.N.R.	ConRail and C.N.R. line through site.

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-10W/PI-2W	LF-11W/PI-2W	LF-1E/PI-27E	LF-2N/PI-13N
SITE VICINITY	1. Human Environment					
	IA Existing Residents	- number of people (estimated people)	LF-10W-52 PI-2W-23	LF-11W-122 PI-2W-23	LF-1E-62 PI-27E-17	LF-2N-52 PI-13N-59
		- number of residences	LF-10W:16 PI-2W:-7	LF-11W:-38 PI-2W:-7	LF-1E:22 PI-27E:6	LF-2N:-16 PI-13N:-18
	IB Existing Resources	- number of farm building complexes, average and above average with lands in 500 m and 1000 m	9+2	12+2	7+1	8+1
		- sensitive crops (within 5 km radius $/ha)	160	160	42	137
		- livestock populations (within 5 km radius #/40 ha)	1251	1251	1667	79
	IC Existing Community and Recreation Features	- number and type - public community features	[illegible] Baptist Church and Cemetery	0	0	0
		- number and type - public recreation features	0	0	1-Grassy Brook Park (PI-27E)	1-Derrydale Golf Course (LF-2N)
		- number and type - private community features	0	0	1- Hungarian Cultural Centre (PI-27E)	1-Hansa Haus (LF-2N)
		- number and type - private recreation features	0	0	0	0
		- known archaeological and historical sites	1-Shaver Family Cemetery (PI-2W)	1-Century Farm (LF-11W) 1-Shaver Family Cemetery (PI-2W)	0	1-Derry West Historic Cemetery (LF-2N)
	ID Community Character and Lifestyle	- land use pattern	-LF-10W-agricultural with significant Hydro corridor and transmission station impacts -PI-2W-industrial development currently underway, abutting hamlet of Duff's Corners with several residential, commercial uses	-LF-11W-agricultural with significant non-farm residences and some Hydro corridor and transmission station impacts -PI-2W-industrial development currently underway, abutting hamlet of Duff's Corners with several residential, commercial uses	-LF-1E-agricultural with some non-farm uses including rural non-farm residences and commercial uses -PI-27E-primarily vacant lands to be developed for industrial uses, abuts heavy industrial area to north, and agricultural uses to south, 3 industrial uses in area	-LF-2N-rural area with many urban uses, area under pressure for urban development -PI-13N-agricultural area with many non-farm residential uses, land speculation is significant
		- social and economic character	-LF-10W-rural area, no industry, mix of rural residential and farm dwellings -PI-2W-emerging industrial area, primarily rural residential dwellings, some farm dwellings	-LF-11W-rural area, no industry, primarily rural residential dwellings, some farms -PI-2W-emerging industrial area, primarily rural residential dwellings, some farm dwellings	-LF-1E-urban fringe area, within view of industry, mix of rural residential and farm dwellings -PI-27E-urban fringe area, within view of industry, mix of rural residential and farm dwellings	-LF-2N-urban fringe area, within view of industry, primarily rural residential dwellings, some farm dwellings -PI-13N-urban fringe area, no industry, mix of rural residential and farm dwellings
	IE Future Residents	- projected population levels	-some residential infilling possible with Duff's corners	-some residential infilling possible with Duff's corners	0	0
		- approved residential plans of subdivision	0	0	0	0
		- residential land use designations	0	0	0	0
		- residential zoning	0	0	0	0
		- residential development proposals	0	0	0	0

TR-10,11

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-10W/PI-2W	LF-11W/PI-2W	LF-1E/PI-27E	LF-2N/PI-13N
SITE VICINITY	I. Human Environment					
	IF Future Resources	- predominant soil capability class	4	3)4	2	1
		- rural/agricultural designation	LF-10W-Rural Agricultural I Rural Agricultural II Open Space PI-2W- Industrial Agricultural Commercial	LF-11W-Agricultural Rural Agricultural I Rural Agricultural II Open Space PI-2W- Industrial Agricultural Commercial	LF-1E- Good General Agricultural PI-27E-Industrial Good General Agricultural Hazard Lands Highway Commercial Open Space	LF-2N- Special Policy Area Major Open Space PI-13N-Agriculture Conservation Hazard Lands none
	IG Existing Commercial and Industrial Uses	- number and type - commercial facilities	4-restaurant, gas stations (2) (PI-2W) auto repairs (LF-10W)	4-kennel (LF-11W), restaurant, gas stations (2) (PI-2W)	2-auto repair (LF-1E) used car	4-restaurant, fruit market, gas stations (2) (LF-2N)
		- number and type - industrial facilities	1-Cdn. Inst. of Metallurgy (PI-2W)	1-Cdn. Inst. of Metallurgy (PI-2W)	0	0
	IH Future Commercial and Industrial Uses	- planned and proposed commercial facilities	0	0	0	LF-2N - proposed secondary plan would permit a variety of commercial and industrial uses
		- planned and proposed industrial facilities	0	0	0	
	II. Costs					
	IIA	- proximity to rail access (to PI sites)	none	none	CanRail on site	none

TR-10.13
10-26-84

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(partially integrated)

	SITE AREA	FACTORS	INDICATORS	LF-4N/PI-13N
	SITE VICINITY	1. Human Environment		
		IA Existing Residents	- number of people (estimated population)	LF-4N-42 PI-13N-58
			- number of residences	LF-4N:-13 PI-13N:-18
		IB Existing Resources	- number of farm building complexes, average n and above average with lands in 500 m and 1000 m	9+2
			- sensitive crops (within 5 km radius $/ha)	137
			- livestock populations (within 5 km radius #/40 ha)	79
		IC Existing Community and Recreation Features	- number and type - public community features	0
			- number and type - public recreation features	0
			- number and type - private community features	0
			- number and type - private recreation features	0
			- known archeological and historical sites	-
TR-10.14		ID Community Character and Lifestyle	- land use pattern	-LF-4N-agricultural with some non-farm residential uses - Niagara Escarpment is dominant visual feature -PI-13N-agricultural area with many non-farm residential uses, land speculation is significant
			- social and economic character	-LF-4N-urban fringe area, no industry, mix of rural residential and farm dwellings -PI-13N-urban fringe area, no industry, mix of rural residential and farm dwellings
		IE Future Residents	- projected population levels	0
			- approved residential plans of subdivision	0
			- residential land use designations	0
			- residential zoning	0
			- residential development proposals	0

Table K.2 COMPARATIVE EVALUATION OF SITING OPTIONS

(partially integrated)

SITE AREA	FACTORS	INDICATORS	LF-4N/PI-13N
SITE VICINITY	I. Human Environment		
	IF Future Resources	- predominant soil capability class	I
		- rural/agricultural designation	LF-4N- Agriculture Conservation Hazard Lands PI-13N-Agriculture Conservation Hazard Lands
	IG Existing Commercial and Industrial Uses	- number and type - commercial facilities	0
		- number and type - industrial facilities	0
	IH Future Commercial and Industrial Uses	- planned and proposed commercial facilities	0
		- planned and proposed industrial facilities	0
	II. Costs		
	IIA	- proximity to rail access (to PI sites)	none

TABLE K3

Preferred Access Road Options

SITE AREA ACCESS ROADS -	FACTORS	INDICATORS	LF-10W	LF-11W	LF-1E	LF-3C	LF-8C	LF-9C	LF-3E	LF-4W	LF-6W
LOCAL	I **Human Environment**										
	IA Transportation Safety	- proximity to arterial road	1,4 km	0 km	1,7 km	3,2 km	1,4 km	0 km	0 km	0 km	0 km
		- difficulty of access (number of railway crossings)	0	0	0	0	0	0	0	0	0
	IB Existing Residents	- number and size of population concentrations	none	-	0	none	none	-	-	none	-
		- number of residences (housing)	6	-	8	24	3	-	-	25	-
		- estimated population along access roads	20	-	23	84	11	-	-	80	-
		- distance through strip residential development (km)	0	-	0	0	0	-	-	0	-
	IC Existing Resources	- number of active farm complexes	2	-	3	13	2	-	-	7	-
		- livestock populations along access routes (within 2 km band) (000s)	.08	-	12,6	36,1	40,0	-	-	0,4	-
	ID Existing Community and Recreation Features	- number and type - community features	0	-	0	0	0	-	-	1 - Century farm	-
		- number and type - recreation features	0	-	0	0	0	-	-	-	-
	IE Future Residents	- distance through residential land use designations (km)	0	-	1,3	0	0	-	-	0,6	-
	IF Future Resources	- length across Class 1 agricultural equivalent land (km)	0,5	-	0	0	1.0	-	-	2,9	-
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	0	-	0	0	0	-	-	0	-
		- distance through industrial areas (km)	0	-	0	0	0	-	-	0	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	-	0	0	0	-	-	0	-
		- distance through designated industrial areas (km)	0	-	0	0	0	-	-	0	-
	II **Physical & Biological Environment**										
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	-	100	-	-	-	-	-
	IIB Stream Crossings	- number of stream crossings	1	-	1	4	1	-	-	4	-
		- stream crossing constraint rating	no constraint	-	no constraint	minor constraint	no constraint	-	-	major constraint	-

TR-12/K3

TR-12/K3/1D

K3/1F

TABLE K3

Preferred Access Road Options

SITE AREA ACCESS ROADS -	FACTORS	INDICATORS	LF-10W	LF-11W	LF-1E	LF-3C	LF-8C	LF-9C	LF-3E	LF-4N	LF-4N
REGIONAL	I **Human Environment**										
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	31.6	14.4	15.4	119.0	90.5	85.6	9.0	48.0	25.8 km
		- distance to freeways	- 9.6 km to 403E - 20.0 km to 403W	- 5.6 km to 403E - 16.0 km to 403W	- 3.6 km to QEW	- 32.0 km to QEW	- 21.9 km to QEW	- 21.7 km to QEW	- 2.1 km to QEW	- 11.2 km to 401	- 14.3 km to QEW
		- total number of level railway crossings	0	0	0	0	0	0	0	2	1
		- number of intersections where a turn is required	2	3	2	3	2	1	0	1	1
	IB Existing Residents	- distance through strip residential development (km)	0	0	0	- 4.5 km (Vineland) - 0.2 km (Bismarck)	- 4.5 km (Vineland)	- 4.5 km (Vineland)	0	- 0.3 km (Omagh)	- 0.7 km (Palermo)
		- number of communities by population	none	none	0	2 - Vineland (1150) - Bismarck (50)	1 - Vineland (1150)	- Vineland (1150)	none	2 - Boyne (< 25) - Omagh (30)	2 - Palermo (200) - Boyne (<25)
		- estimated population along access road	141	128	12	432	257	271	9	71	346
	IC Existing Resources	- number of active farm complexes	14	13	0	41	20	20	0	6	17
		- sensitive crops ($000s)	264.5	238.4	13.3	2,007.0	1,797.9	1,813.3	8.0	100.2	97.6
		- livestock populations (000s)	43.9	38.7	17.3	486.0	285.4	301.2	10.4	8.9	29.0
	ID Existing Community and Recreation Features	- number and type of community and recreation features	3 - Shaver Family Cemetery - MTC yard - Ancaster Double Rink	3 - Shaver Family Cemetery - MTC yard - Ancaster Double Rink	1 - Hungarian Cultural Centre	11 - experimental farm - churches (3) - schools (2) - conservation areas (2) - women's centre - campsite - hall	9 - conservation areas - experimental farm - churches (3) - school - women's centre - campsite	3 - experimental farm - churches (3) - conservation areas (2) - school - women's centre - campsite	1 - Hungarian Cultural Centre	4 - church and cemetery (2) - park - community centre	6 - scenic trail/riding - MTC Patrol - park - golf club - regional offices - provincial park
	II **Physical & Biological Environment**										
	IIA Hydrogeology	- length of sensitive lands crossed (m)	1,850	1,850	150	4950	4,300	4,300	-	1400	1400
	IIB Stream Crossings	- number of stream crossings - stream crossing constraint rating	6 minor	5 no constraint	1 no constraint	23 major	16 major	18 major	0 no constraint	9 major	16 major

TABLE K-3

Preferred Access Road Options

SITE AREA ACCESS ROADS -	FACTORS	INDICATORS	TO PI-1A1	PI-1A1 TO LF-2N	TO PI-1N	TO PI-1N	PI-1N TO LF-2N	TO LF-4N	TO LF-4N	PI-1N TO LF-4N
LOCAL	I **Human Environment**									
	IA Transportation Safety	- proximity to arterial road	0 km	N/A	0 km	0 km	N/A	0 km	0 km	N/A
		- difficulty of access (number of level railway crossings	0	N/A	0	0	N/A	0	0	N/A
	IB Existing Residents	- number and size of population concentrations	-	-	-	-	-	none	-	-
		- estimated population along access roads	-	-	80	-	80	80	-	-
		- number of residences (housing)	-	-	25	-	25	25	-	-
		- distance through strip residential development (km)	-	-	0	-	0	0	-	-
	IC Existing Resources	- number of active farm complexes	-	-	6	-	6	7	-	-
		- livestock populations along access routes (within 2 km band) (000s)	-	-	0.4	-	0.4	0.4	-	-
	ID Existing Community and Recreation Features	- number and type - community features	-	-	1 - Century Farm	-	1 - Century Farm	1-Century Farm	-	-
		- number and type - recreation features	-	-	0	-	0	-	-	-
	IE Future Residents	- distance through residential land use designations (km)	-	-	- .6 km (Parkway Belt)	-	- .6 km (Parkway Belt)	0.6	-	-
	IF Future Resources	- length across Class 1 agricultural equivalent land (km)	-	-	2.9	-	2.9	2.9	-	-
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	-	0	-	0	0	-	-
		- distance through industrial areas (km)	-	-	0	-	0	0	-	-
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	-	0	-	0	0	-	-
		- distance through designated industrial areas (km)	-	-	0	-	0	0	-	-
	II **Physical & Biological Environment**									
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	0	-	0	-	-	-
	IIB Stream Crossings	- number of stream crossings	-	-	4	-	4	4	-	-
		- stream crossing constraint rating	-	-	major	-	major	major	-	-

TABLE K-3

Preferred Access Road Options

SITE AREA ACCESS ROADS -	FACTORS	INDICATORS	TO PI-1A1	PI-1A1 TO LF-2N	TO PI-1N	TO PI-1N	PI-1N TO LF-2N	TO LF-4N	TO LF-4N	PI-1N TO LF-4N
REGIONAL	I Human Environment									
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	73.8	64.4	36.9	12.5	52.3	48.0	25.8	4.3
		- distance to freeways (km)	- 19.0 km to 401	N/A	- 8.6 km to 401	- 10.4 km to QEW	N/A	- 11.2 km to 401	- 14.3 km to QEW	N/A
		- total number of level railway crossings	1	1	1	0	1	2	1	1
		- number of intersections where a turn is required	4	3	1	0	1	1	1	0
	IB Existing Residents	- distance through strip residential development (km)	0	0	- 0.3 km (Omagh)	- 1.7 km (Palermo)	- 0.3 km (Omagh	- 0.3 (Omagh)	- 0.7 km (Palermo)	0
		- number of communities by population	1 - Derry West (110)	0	2 - Omagh (30) - Boyne (<25)	1 - Palermo (200)	3 - Omagh (30) - Boyne (<25) - (Derry West (11C	2 - Boyne (<25) - Omagh (30)	2 - Palermo (200) - Boyne (<25)	none
		- estimated population along access roads	128	66	55	282	183	71	346	7
	IC Existing Resources	- number of active farm complexes	9	5	7	13	10	6	17	1
		- sensitive crops ($000s)	166.4	149.0	82.4	62.4	85.1	100.2	97.6	5.9
		- livestock populations (000s)	1.7	1.3	2.5	20.2	2.6	8.9	29.0	2.1
	ID Existing Community and Recreation Features	- number and type of community and recreation features	9 - Hansa Haus - cemeteries (3) - public works yard - ethnic club - Century Farm - banquet hall - parkland	6 - Century Farm - cemeteries (2) - hall - parkland - ethnic club	4 - church & cemetery (2) - park - community centre	6 - scenic trail riding - MTC patrol - park - golf club - Halton Regional offices - provincial park	5 - Hansa Haus - church and cemetery (2) - park - community centre	4 - church & cemetery (2) - park - community centre	6 - scenic trail/riding - MTC Patrol - park - golf club - regional offices - provincial park	0
	II Physical & Biological Environment									
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	-	250	1,400	250	1400	1400	–
	IIB Stream Crossings	- number of stream crossings - stream crossing constraint rating	34 moderate	33 moderate	4 moderate	12 major	9 major	9 major	16 major	2 major

TABLE K3

Preferred Access Road Options

SITE AREA ACCESS ROADS -	FACTORS	INDICATORS	TO LF-1C	TO PI-18E	PI-18E TO LF-1C	TO PI-2W	PI-2W TO LF-10W	PI-2W TO LF-11W
LOCAL	I **Human Environment**							
	IA Transportation Safety	- proximity to arterial road	0.8 km	0	N/A	1.6 km	N/A	N/A
		- difficulty of access (number of level railway crossings)	1	0	N/A	0	N/A	N/A
	IB Existing Residents	- number and size of population concentrations	-	-	10	0	0	0
		- number of residences (housing)	1	-	1	4	6	6
		- estimated population along access routes	4	-	24	20	20	10
		- distance through strip residential development (km)	0	-	0	0	0	0
	IC Existing Resources	- number of active farm complexes	0	-	0	0	2	0
		- livestock populations along access routes (within 2 km band) (000s)	9.8	-	9.8	3.5	3.6	3.5
	ID Existing Community and Recreation Features	- number and type - community features	0	-	0	1 - maintenance building	0	0
		- number and type - recreation features	0	-	0	0	0	0
	IE Future Residents	- distance through residential land use designations (km)	0	-	0	0	0	0
	IF Future Resources	- length across Class 1 agricultural equivalent land (km)	0.5	-	0.8	0.3	0.8	0.3
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	0	-	0	.5 km	0	0
		- distance through industrial areas (km)	0	-	0	0	0	0
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	0	-	0	.5 km	0	0
		- distance through designated industrial areas (km)	0	-	0	0	1 km	1 km
	II **Physical & Biological Environment**							
	IIA Hydrogeology	- length of sensitive land crossed (m)	0	-	0	900	900	900
	IIB Stream Crossings	- number of stream crossings	0	-	0	0	1	0
		- stream crossing constraint rating	no constraint	-	no constraint	no constraint	no constraint	no constraint

TABLE K3

Preferred Access Road Options

SITE AREA ACCESS ROADS -	FACTORS	INDICATORS	TO LF-1C	TO PI-18E	PI-18E TO LF-1C	TO PI-2W	PI-2W TO LF-10W	PI-2W TO LF-11W
REGIONAL	I **Human Environment**							
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles	151.6	29.3	44.8	7.5	35.2	18.0
		- distance to freeways	- 32.9 km to QEW	- 11.5 km to 406 (existing)	N/A	- 2.1 km to 403E - 14.5 km to 403W	N/A	N/A
		- total number of level railway crossings	4	0	2	0	0	0
		- number of intersections where a turn is required	3	1	6	2	3	2
	IB Existing Residents	- distance through strip residential development (km)	- 4.5 km (Vineland) - 1.5 km (Beckett's Bridge) - 1.0 km (near site)	- 7.0 km (Welland)	- 1.0 km (R.R. 23)	0	0	0
		- number of communities by population	1 - Vineland (1150)	- Welland (45,417)	none	none	none	none
		- estimated population along access roads	546	42	151	0	128	112
	IC Existing Resources	- number of active farm complexes	45	0	13	0	14	13
		- sensitive crops ($000s)	2,277.5	19.2	87.4	9.6	254.8	236.2
		- livestock populations (000s)	364.5	.04	23.7	5.9	38.0	34.3
	ID Existing Community and Recreation Features	- number and type of community and recreation features	11 - experimental farm - churches (4) - school - conservation area - women's centre - campsite - golf and country club - road maintenance yard	32 - Hunt Club - exhibition - mini golf - malls (3) - cemeteries (2) - schools (2) - churches (6) - college - government buildings (6) temple - post office - multicultural centre - halls (2) - fire station - YMCA - Salvation Army - Temple Club	1 - Welland Feeder Canal	0	2 - double rink - MTC yard	2 - double rink - MTC yard
	II **Physical & Biological Environment**							
	IIA Hydrogeology	- length of sensitive lands	4,900	1,100	4,100	600	1,250	1,250
	IIB Stream Crossings	- number of stream crossings	18	4	2	0	6	5
		- stream crossing constraint rating	major	major	minor	no constraint	minor	no constraint

TABLE K3

Preferred Access Road Options

SITE AREA ACCESS ROADS -	FACTORS	INDICATORS	TO PI-27E	PI-27E TO LF-1E	TO PI-13N	TO PI-13N	PI-13N TO LF-7N	TO LF-2N	TO LF-2N	PI-13N TO LF-4N
LOCAL	I **Human Environment**									
	IA Transportation Safety	- proximity to arterial road	0	N/A	0.4 km	0.4 km	N/A	0 km	0 km	N/A
		- difficulty of access (number of level railway crossings)	0	N/A	0	0	N/A	0	0	N/A
	IB Existing Residents	- number and size of population concentrations	-	0	0	0	0	-	-	0
		- estimated population along access roads	-	23	84	4	84	-	-	4
		- number of residences (housing)	-	8	26	1	26	-	-	0
		- distance through strip residential development (km)	-	0	0	0	0	-	-	0
	IC Existing Resources	- number of active farm complexes	-	2	6	1	6	-	-	1
		- livestock populations along access routes (within 2 km band) (000s)	-	12.6	0.6	0.3	0.6	-	-	0.3
	ID Existing Community and Recreation Features	- number and type - community features	-	0	1 - Century Farm	0	1 - Century Farm	-	-	0
		- number and type - recreation features	-	0	0	0	0	-	-	0
	IE Future Residents	- distance through residential land use designations (km)	-	1.3	0	0	0	-	-	0
	IF Future Resources	- length across Class 1 agricultural equivalent land (km)	-	0	3.7	0.5	3.7	-	-	0.5
	IG Existing Commercial and Industrial Uses	- distance through commercial areas (km)	-	0	0	0	0	-	-	0
		- distance through industrial areas (km)	-	0	0	0	0	-	-	0
	IH Future Commercial and Industrial Uses	- distance through designated commercial areas (km)	-	0	0	0	0	-	-	0
		- distance through designated industrial areas (km)	-	0	0	0	0	-	-	0
	II **Physical & Biological Environment**									
	IIA Hydrogeology	- length of sensitive lands crossed (m)	-	0	0	0	0	-	-	0
	IIB Stream Crossings	- number of stream crossings	-	0	6	2	6	-	-	2
		- stream crossing constraint rating		no constraint	major	no constraint	major	-	-	no constraint

TABLE K3

Preferred Access Road Options

SITE AREA ACCESS ROADS -	FACTORS	INDICATORS	TO PI-27E	PI-27E TO LF-1E	TO PI-13N	TO PI-13N	PI-13N TO LF-2N	TO LF-2N	TO LF-2N	PI-13N TO LF-4N
REGIONAL	I **Human Environment**									
	IA Transportation Safety	- transportation accident frequency (accidents/million vehicles)	4.3	15.9	33.0	34.8	48.4	1.8	9.1	33.5
		- distance to freeways	- 1.0 km to QEW	N/A	- 7.7 km to 401	- 16.4 km to QEW	N/A	- 1.5 km to 401	- 1.2 km to 410	N/A
		- total number of level railway crossings	0	0	1	0	1	0	0	1
		- number of intersections where turn is required	0	2	2	0	2	0	1	1
	IB Existing Residents	- distance through strip residential development (km)	0	0	- 0.6 km (Omagh)	- 1.7 km (Palermo) - 0.6 km (Omagh)	- 0.3 km (Omagh)	0	0	- 0.6 km (Omagh)
		- number of communities by population	none	none	- Omagh (30)	- Palermo (200) - Omagh (30) - Boyne (<25)	2 - Omagh (30) - Derry West (110)	- Derry West (110)	none	- Boyne (< 25) - Omagh (30)
		- estimated population along access roads	3	12	20	413	52	32	16	109
	IC Existing Resources	- number of active farm complexes	0	0	6	22	9	3	0	9
		- sensitive crops ($000s)	8.0	8.0	69.3	92.9	72.0	2.7	2.7	74.5
		- livestock populations (000s)	10.4	10.4	0.6	24.3	0.7	.08	.08	8.9
	ID Existing Community and Recreation Features	- number and type of community and recreation features	0	1 - cultural centre	0	10-provincial park - Halton Regional offices - golf club - parks (2) - scenic trail/riding - community centre - church & cemeteries(2) - MTC patrol	1 - Hansa Haus	1 - Hansa Haus	0	4 - community centre - park - church and cemeteries (2)
	II **Physical & Biological Environment**									
	IIA Hydrogeology	- length of sensitive lands crossed (m)	0	150	0	1650	0	0	0	250
	IIB Stream Crossings	- number of stream crossings - stream crossing constraint rating	0 no constraint	2 no constraint	1 no constraint	18 major	3 no constraint	2 no constraint	2 no constraint	10 major

TR-12/K3/2J

TR-12/K3/2K

TR-12/K3/2L

TR-12/K3/2M.1

MAPS NOT

FILMED

CARTES

OMISES

POOR

QUALITY

ORIGINAL